gineering
brary
JUN 4 _ 1925

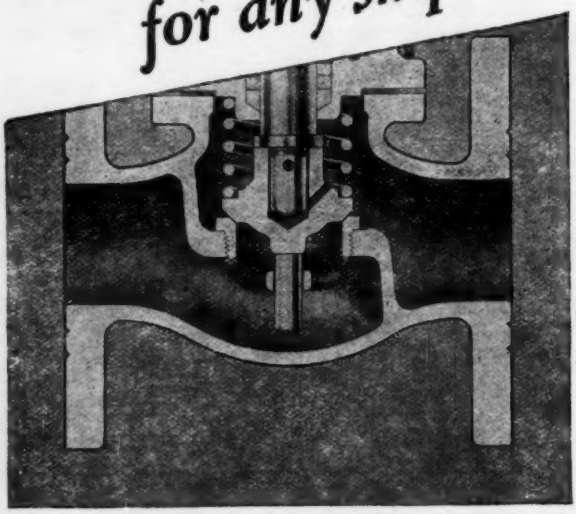
United States Naval Institute Proceedings

VOL. 51 JUNE, 1925 NO. 268

CONTENTS

Some Fundamentals of Sea Power.—Stirling 889
Length of Service Retirement vs. Age in Grade Retirement.—Taussig 919
The Line Personnel Situation at the Present Time.—Smith . . 934
Other Days in Kiang-su.—Cotten 952
The U. S. Navy and the Japanese Earthquake.—Lamb . . . 963
Joint Army and Navy Operations. Part VI.—Pye 975
Corsairs.—Mendl 1001
Discussion 1016
Professional Notes 1027
Notes on International Affairs 1085
Book Reviews 1098
Secretary's Notes 1105

Any valve or fitting for any ship



CRANE NO. 4187E GLOBE SCREW-DOWN CHECK VALVE,
YOKE TYPE, SECTIONAL VIEW

CRANE

Address all inquiries to Crane Co., Chicago

GENERAL OFFICES CRANE BUILDING, 836 S. MICHIGAN AVENUE, CHICAGO

Branches and Sales Offices in One Hundred and Forty-eight Cities

National Exhibit Rooms: Chicago, New York, Atlantic City, San Francisco and Montreal

Works: Chicago, Bridgeport, Birmingham, Chattanooga, Trenton and Montreal

CRANE EXPORT CORPORATION: NEW YORK, SAN FRANCISCO, SHANGHAI

CRANE LIMITED: CRANE BUILDING, 386 BEAVER HALL SQUARE, MONTREAL

CRANE-BENNETT, LTD., LONDON

CIE CRANE: PARIS, NANTES, BRUSSELS

United States Naval Institute Proceedings

June, 1925

Edited by H. A. Baldridge

U. S. Naval Institute

Publication Office: Menasha, Wisconsin
Editorial and Business Office: Annapolis, Maryland

COPYRIGHT, 1925
BY
U. S. NAVAL INSTITUTE

The Collegiate Press
GEORGE BANTA PUBLISHING CO.
MENASHA, WIS.

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

VOL. NO. 51, NO. 6 JUNE, 1925 WHOLE NO. 268

Contents

SOME FUNDAMENTALS OF SEA POWER. BY CAPTAIN YATES STIRLING, JR., U. S. NAVY 889

LENGTH OF SERVICE RETIREMENT VS. AGE IN GRADE RETIREMENT. BY CAPTAIN J. K. TAUSSIG, U. S. NAVY 919

THE LINE PERSONNEL SITUATION AT THE PRESENT TIME. BY CAPTAIN R. C. SMITH, U. S. NAVY, RET. 934

OTHER DAYS IN KIANG-SU. BY CAPTAIN LYMAN A. COTTEN, U. S. NAVY 952

THE U. S. NAVY AND THE JAPANESE EARTHQUAKE. BY LIEUTENANT S. G. LAMB, U. S. NAVY 963

JOINT ARMY AND NAVY OPERATIONS. PART VI. BY CAPTAIN W. S. PYE, U. S. NAVY 975

CORSAIRS. BY DR. ING. WLADIMIR V. MENDL, A.M.I.N.A. 1001

DISCUSSION 1016

PROFESSIONAL NOTES 1027

NOTES ON INTERNATIONAL AFFAIRS 1085

BOOK REVIEWS 1098

SECRETARY'S NOTES 1105

The writers only are responsible for the contents of their respective articles

Editor, Captain H. A. Baldridge; Assistant Editor, Lieutenant Commander Roy C. Smith, Jr.

Copyright, 1925, by U. S. Naval Institute.

Published monthly at 450 Ahnaip St., Menasha, Wis.

Executive, Editorial, and Business Offices, U. S. Naval Institute, Annapolis, Md.

Entered as second-class matter at the post-office at Menasha, Wis., April 4, 1922, and at the post-office at Annapolis, Md., under Act of Aug. 24, 1912. Acceptance for mailing at the special rate of postage provided for in section 1103, Act of Oct. 3, 1919, authorized Mar. 13, 1922.

Membership dues (including Proceedings), $3.00 a year.

Subscription Rates, $5.00 a year. (Foreign postage extra.) Single copies, 50c.

OFFICERS OF THE INSTITUTE

President

REAR ADMIRAL HENRY B. WILSON, U. S. NAVY

Vice-President

REAR ADMIRAL RICHARD H. JACKSON, U. S. NAVY

Secretary-Treasurer

CAPTAIN H. A. BALDRIDGE, U. S. NAVY

Board of Control

REAR ADMIRAL HENRY B. WILSON, U. S. NAVY *(ex officio)*
REAR ADMIRAL RICHARD H. JACKSON, U. S. NAVY *(ex officio)*
BRIGADIER GENERAL GEORGE RICHARDS, U. S. MARINE CORPS
CAPTAIN W. T. CLUVERIUS, U. S. NAVY
CAPTAIN W. G. DUBOSE, (CC), U. S. NAVY
CAPTAIN P. B. DUNGAN, U. S. NAVY
COMMANDER BYRON McCANDLESS, U. S. NAVY
LIEUTENANT COMMANDER W. G. GREENMAN, U. S. NAVY
CAPTAIN H. A. BALDRIDGE, U. S. NAVY *(ex officio)*

PAST PRESIDENTS

ADMIRAL DAVID D. PORTER, U. S. NAVY, 1873
REAR ADMIRAL JOHN L. WORDEN, U. S. NAVY, 1874
REAR ADMIRAL C. R. P. RODGERS, U. S. NAVY, 1875-78
COMMODORE FOXHALL A. PARKER, U. S. NAVY, 1878-79
REAR ADMIRAL JOHN RODGERS, U. S. NAVY, 1879-82
REAR ADMIRAL C. R. P. RODGERS, U. S. NAVY, 1882-83
REAR ADMIRAL THORNTON A. JENKINS, U. S. NAVY, 1883-85
REAR ADMIRAL EDWARD SIMPSON, U. S. NAVY, 1885-87
REAR ADMIRAL STEPHEN B. LUCE, U. S. NAVY, 1887-98
REAR ADMIRAL WM. T. SAMPSON, U. S. NAVY, 1898-1902
REAR ADMIRAL H. C. TAYLOR, U. S. NAVY, 1902-04
REAR ADMIRAL C. F. GOODRICH, U. S. NAVY, 1904-09
REAR ADMIRAL RICHARD WAINWRIGHT, U. S. NAVY, 1909-11
REAR ADMIRAL BRADLEY A. FISKE, U. S. NAVY, 1911-23
REAR ADMIRAL WILLIAM L. RODGERS, U. S. NAVY, 1923-24

After the Earthquake
The Old U. S. Naval Hospital at Yokohama

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

VOL. NO. 51, NO. 6 JUNE, 1925 WHOLE NO. 268

SOME FUNDAMENTALS OF SEA POWER

BY CAPTAIN YATES STIRLING, JR., U. S. NAVY

Motto: *Prudens futuri*

THE United States is at this moment the greatest creditor nation in the world. Its home trade is nearing the saturation point. It has a large fleet of merchant ships, most of them owned by the government, but lying idle. It has an unlimited source of men with brains and men skilled with their hands and a marvelous organizing talent for production. The nation's circulating capital is being freely used to keep productive labor in employment on wages that have made the conditions of living in this country far in advance of any nation yet known. The United States has reached a pinnacle of prosperity almost undreamed. For it to continue to enjoy this prosperity amid peace is the aim of all our statesmen. The new methods used in this direction have been to endeavor to arouse a spirit of fair play among nations in their trade relations, to outlaw war, to limit armaments and to submit all questions affecting nations to a court of arbitration. These methods run counter to all the teachings of history, and the hope of success must therefore be based upon a conviction that human nature has undergone a complete change in the last few years, and that hereafter, what has happened in the past is no guide to what may happen in the future. These aspirations have naturally affected the thoughts and ideas of our people and have turned public opinion from a consideration of the quantity and quality of the instruments to be used for the defense of the nation's institutions and possessions.

AFTER THE EARTHQUAKE
The Old U. S. Naval Hospital at Yokohama

The prosperity of this nation is an evolutionary achievement receiving an impetus during the years of the World War before we entered it, and except for a few years immediately after the Armistice when a slackening of industry occurred, is still in full swing. Many nations that previous to the World War were financially sound and prosperous are now verging on bankruptcy. The productive labor in these countries, although decreased through losses in the World War, still exists, and only lacks a balanced and stable government and financial system to enable it to produce wealth and thus permit those nations to regain their places in the world. Competition between nations for the sale of their produce will increase as those nations regain this productive efficiency.

The United States has grown rich through production. Its capital is greater than that of any country in the world. Unless this production can be continued and increased, the nation's great wealth must diminish.

"A merchant marine is the cause and justification of a navy" and "Trade follows the flag" are sayings that have become familiar to all. Capital, production, merchant ships, trade, profits and wealth are all links in the chain of prosperity of a nation. To arrive at an understanding of the relationship of these factors one with another and all with our sea power is the aim of this paper.

A nation's wealth, and how accumulated.—The capital stock of any country is the sum of that owned by all of its members. It is the resources of the country available for such employment as will add an increment to that capital stock. By capital stock is meant all manner of wealth—land, buildings, food, luxuries, clothing, raw materials of whatever nature, machinery. It includes all those things from which an income can be derived, the abilities and talents of the people, or in other words, their ability to produce wealth.

For convenience, political economists divide this capital stock or capital of a country or nation into three parts:

(a) The part reserved for immediate consumption, consisting of such articles as food, clothing, furniture, and other articles of necessity or luxury in the possession of the citizens of the country, who will consume them themselves.

(b) The second part is what is called fixed capital. This affords its owners a profit without circulating or changing hands. Fixed capital con-

sists of such articles as machines or instruments which abridge labor, real estate, transportation lines, improvements on land or buildings, and also the talent and ability of the citizens—in other words, the capital that is fixed as to locality and tenure. It produces profit, but is not sufficiently liquid to be turned readily into money.

(c) The third portion is the circulating capital which by changing owners affords revenue. This capital includes money or its equivalent (the medium by which all circulating capital is distributed), food stuffs in possession of its owners but not yet in the hands of the consumers, raw materials for manufacture, and finished material in the hands of merchants.

All capital can be made to fall under one or another of these three heads. The first will be consumed, and no revenue will be derived from it. The second is a distinct asset to the citizens, but always remaining in their possession, it is not available to circulate and thereby increase in value by such means. It will be seen therefore that the capital of a country can be increased only by employment of the third part, or the circulating capital. This is the capital that works, and through turnovers enriches its owners, and through them the country.

Labor.—It is customary to divide labor into two classes, productive and non-productive. Productive labor only can make a nation rich and powerful. Non-productive labor is pure loss as far as accumulated wealth is concerned, yet certain non-productive labor is necessary, as, for instance, that employed in maintaining the implements for national defense, the arts, etc.

It is clear that the capital used in production must first be replaced before any revenue can be deducted, otherwise, available capital will diminish. Therefore, that part of the produce of labor which goes to replace capital spent must naturally again be employed in productive labor. When a person employs his capital, he naturally expects it both to replace the capital used and give him a profit. To do this, he must employ it in productive labor. The gross receipts from the use of this circulating capital should be divided into two sums: the first, and always the larger, gives back the capital used, and the other sum is profits. A person who continuously uses that part of his gross receipts that should go to replace his capital spent in employing non-productive labor will in the end arrive at poverty, for after each year, his capital will become less until finally he will have nothing.

Circulating capital.—Circulating capital is the friend of productive labor for it maintains such labor steadily in employment.

This capital includes the original money or stock and that part of the profits which the owner of the capital decides to put back into the business. *Revenue* is that part of the profits which he has decided to use for his own entertainment and from which no profit is expected. The proportion between *capital* and *revenue* spent in any community regulates the proportion between industry and idleness among productive labor. When a greater proportion of *revenue* is being spent, in most cases, it goes to support non-productive labor. Many of the purchases of revenue may be the product of productive labor, yet the employment of this wealth, in not increasing the capital available to employ productive labor, will, in the end, harm production.

The employment of capital.—The circulating capital of the citizens of a nation may be employed in four different ways: viz.,

(1) In raising or procuring the raw materials required for the use of the citizens of the nation.

(2) In manufacturing and preparing this raw material for use.

(3) In transporting either raw material or articles manufactured from it from the places where their demand is less to where their demand is greater.

(4) In retailing goods direct to ultimate consumers.

Kinds of trade.—The transportation of raw material and manufactured articles from those places where they are in abundance to places where they are wanted is the business of wholesale merchants, and this may be reduced to three different kinds of trade: i.e., (a) The home trade. (b) The foreign trade of consumption, or the import and export trade. (c) The carrying trade.

The home trade buys in one part of the country and sells in another part of the same country. It is exemplified where articles are purchased at a distance from a great city for sale in that city —articles manufactured in one city are carried to another city where no such articles are manufactured or else manufactured in insufficient quantities to supply the demand. Home trade includes both the inland trade and coastal trade.

The foreign trade of consumption is employed in buying foreign goods for consumption in the home country, or in exporting domestic goods for sale in a foreign country.

The carrying trade is employed in carrying the surplus production of one country to another.

The foreign trade of consumption, commonly termed the import and export trade, and the carrying trade do not increase the wealth of a nation as quickly as does the home trade. Circulating capital seeks a quick turnover and therefore the home trade from which the returns come in frequently—as often as three or four times a year—is most advantageous to capital, and it will absorb this trade to the saturation point before it will look around for other outlets. Only after the saturation point has been reached will capital of its own accord seek other employments. The capital of England long ago began to seek other employments, for its home trade had reached a point of saturation where to employ a greater capital would have put capital in the country in violent competition and greatly decreased the profits of all capital so engaged.

Foreign goods for home consumption frequently are purchased with the produce of domestic industries. In other cases, they are purchased with money and also with some other foreign goods. The latter must have been obtained either through the exchange of domestic goods or money. The method of carrying on this import trade, or foreign trade, does not alter the principle involved, but merely delays the returns to the capital employed. Circulating capital employed in the home trade of a country gives encouragement and support to a greater quantity of productive labor in the country and therefore increases the value of its annual produce much more than an equal capital employed in the import and export trade. The capital employed in the latter has a still greater advantage over an equal capital employed in the carrying trade.

Foreign trade.—When the produce of any particular branch of industry exceeds the demand of the home country, the surplus must be sent abroad and exchanged for something for which there is a demand at home. This trade is a part of the foreign trade of consumption and is known as the export trade. Without this trade, a part of the productive labor of the country must cease and the value of produce diminish. By exporting surplus goods to foreign countries and exchanging them for something in demand at home, this surplus acquires a value which it would not have otherwise, and this increased value compensates the labor

and expense in producing this surplus. It is said that the amount of wheat exported determines the value of all wheat raised by the farmers.

In some countries so much surplus goods are exported that the imports bought with them are beyond the needs of the home country. The surplus imports beyond the needs of the home country therefore must be exported to another foreign country and sold for money or for some other articles for which there is a demand in the home country. Here is the basic reason for "Free Ports" within a protective tariff nation.

When the capital of any country increases to such an extent that it cannot be profitably employed in supplying consumption and supporting the productive labor of that country, the surplus part of that capital naturally goes into the carrying trade and performs useful service to other countries. The carrying trade is said to be the symptom of great national wealth, yet it is not the cause of great wealth. Capital chooses the carrying trade only after being crowded out of the other two trades. It is the least productive for the nation, yet it is the safety valve and governor in the economic life of the nation.

It has been a common belief among political economists that the foreign trade—import and export trade—and the carrying trade are not as immediate in increasing the wealth of a nation engaged in them. In the home trade, profits come in frequently, but in these days of fast freight steamers and railroads and with our universal credit system, it is thought that the result has been to place the whole world within easy reach of a nation and make foreign trade quite as profitable as the home trade.

Naturally, capital will prefer to invest itself at home as long as there are adequate profits, and besides, there is always greater risk when capital goes where the laws of the home country cannot go along with it to insure it against fraud or confiscation. The home trade having reached nearly the point of saturation, then for more capital to compete with the capital already circulating would naturally enough lower the interest to be paid the capital first in use. There is also an attraction toward foreign investments in the high return of interest charged and profits expected, especially where the home government has let it be known that such investments will be protected.

A nation should make certain that all of its circulating capital finds employment—first in the home trade to the point of saturation, and then in the foreign trade to carry away the surplus to prevent its being thrown on the market, thus reducing the value of all production and with it the wages of producers.

Capital employed in the foreign trade of consumption is replaced with a profit and this increased capital continues to buy foreign goods for import into this country. The capital then employed in the import trade does not give employment to our own productive labor except indirectly. The foreign country receives the profit of this capital in maintaining its productive labor—not in cash, but in credit—and the foreign country employs this credit where it will give the greatest advantage. It may happen that this capital then will give employment to productive labor in our country as great as if the same capital was employed in the export trade. In other words, our surplus is transported to foreign countries and there exchanged with articles for which there is still a market in our country and in which production is not sufficient.

The carrying trade is said by political economists not to increase the productive labor of the country, but again, this does not hold today in view of the universal credit system. American capital may be employed in exporting goods to France from Spain and vice versa. The capital involved keeps in employment productive labor in both France and Spain, but in a trade between two foreign countries, those countries are enriched sufficiently to buy goods from us, so indirectly the carrying trade does increase our productive labor and therefore the wealth of the nation.

Political economists also believe that government should not give encouragement to one trade above another. They thought that capital would flow naturally to the trade that is the most profitable. But in these days of keen competition in trade, some governments give large bonuses to their citizens engaged in foreign trade and allow them other aids which are beyond their power to render themselves; it seems evident therefore that capital needs government encouragement and protection when it embarks upon adventures which appear hazardous. This is done by guaranteeing against loss or sharing the losses with the merchants.

Money and taxable wealth.—The prosperity and stability of a nation depend upon its taxable wealth. Government is maintained by the taxes in money paid to it by its citizens. The ability of its citizens to support their government is measured by the quantity of productive labor finding employment in the country, for the annual produce must be proportional to this quantity, and the profit from this produce forms the greater part of the fund from which all taxes ultimately are paid.

Until quite recently, the merchants of the United States, entrenched behind a sufficient tariff wall, gave their first concern to the home market. Those articles of our manufacture that went abroad did so almost unaided. The foreign buyers, anxious to obtain certain lines of American goods, were willing to buy them in American markets, and usually paid for them in spot cash.

Food and raw materials flowed abroad as water finds its level because the demand abroad was great enough to take them in that direction. Thus far, no exertion, so to speak, was required of our merchants or of the government. The home market was not overstocked. The country was developing so rapidly that its citizens absorbed nearly all of the produce of its labor. The soil of the United States was like a mine from which wealth was being annually extracted. The government found little difficulty in obtaining sufficient money by taxing the accumulating wealth of its citizens, and these taxes were not considered oppressive by the taxpayers. Labor in the United States was paid wages commensurate with the standard of living established within the country, while competition with cheap labor abroad was avoided by emigration laws and high tariff on imports. Consequently, during these years the United States may be said to have been a hermit nation.

Money is both a measure of values and the instrument employed in commercial dealings. If we have money, we can obtain almost anything we may desire. While the United States remained a hermit nation commercially, neither the true value of its money nor the quantity of it in circulation made very much, if any, difference. The nation's wealth is not alone in money; in fact, that forms a very small proportion of it. Money is merely the instrument of circulation. While it is true that at one time a larger quantity of money is required to circulate the commercial goods

between citizens, and at another time a less quantity is needed, yet, even so, the actual wealth of a hermit nation is not proportional to the quantity of money in circulation, but is based upon the abundance or the scarcity of consumable goods within the country. The rise in the cost of living in the last decade which has caused the great increase of money in circulation did not of itself increase the nation's wealth.

When a nation ceases to be a hermit nation commercially and sends its consumable goods out of the country, then the real value of its money and securities begins to count. Our goods sent to foreign nations sell for prices measured not in our own money, but in the money of the foreign nation, and the purchasing value of our money in proportion to the value of foreign money measures the extent of our profits. At the moment, the purchasing power of our money in countries abroad is so much greater than that of the foreign money that those countries are unable to buy commercial goods with money, but wish to exchange for them goods produced by their own labor. The value of foreign money within many foreign countries has declined to a great extent, yet not in so vast proportions as when competing in purchasing power with the money of the United States.

Consumable goods made abroad for export to this country are being produced by labor at what would be starvation wages as compared with the purchasing power in that country of our money —yet these wages are sufficient to maintain their own productive labor. The consequence of this is that foreign goods, if sold freely in our home markets, would force our labor to compete with foreign labor so cheap that labor troubles in this country would be inevitable. To prevent this catastrophe, a high tariff is necessary to continue until foreign moneys have risen in value and have a purchasing power in their own country equal to that of our money. (December, 1924)

Great Britain, which has not been a hermit nation commercially for many centuries, is endeavoring to stabilize foreign moneys. The English pound several years ago was quoted at about $3.60 in New York. This is $1.27 less than its true value. This appears to have been in no way disconcerting to England because that country had not the slightest intention of allowing her pound to compete with the inflated value of the American dollar. England's

credits were paid where possible in exported goods or goods purchased in foreign countries and imported into the United States. Also knowing that a high rate of exchange in her favor between herself and certain of her customers throughout the world would retard the development of her foreign trade upon which her life depended, she systematically organized credit systems throughout the world. In exchange for this good office, she has received considerations and privileges that have permitted her to regain that place in the world's trade which she must have to continue as the mistress of the seven seas. It will be noted that at present the value of the pound has risen practically to par.

When capital becomes interested in foreign trade.—It becomes quite evident to the citizens of our country in case any branch of industry produces more than can be consumed, for this state of affairs is at once met by shutting down industrial plants or by reduction of hours of operation. Until we are able to find a profitable market for our surplus produce a large part of the productive labor of the country must be thrown out of employment.

The large volume of capital in the United States makes it ever increasingly difficult to find profitable employment for it. After supplying the consumption of the nation by supporting the productive labor employed in the country, there is a surplus of capital. It is believed that the saturation point in home trade has been reached and that capital is feeling its way to the normal outlets, the foreign trade of consumption and the carrying trade.

Being faced with the necessity of exporting our surplus of manufactured articles, and with capital seeking to embark in the export trade and the carrying trade, it is quite logical that we as a nation should turn our thoughts toward the sea, for the nation is hemmed in by the sea barriers on two sides. Our produce must be embarked upon the ocean to find a market sufficiently profitable to replace the capital and with a profit, and thus to continue to increase the quantity of productive labor employed in the country. If productive labor does not increase, then the nation will either stand still or go backward in national wealth.

Highways are built on land for the easy transportation of merchandise. Ships are the highways of the sea. When we have built our ships, we have at the same time completed the highways across the ocean to the market beyond. In the markets across

the sea, all nations theoretically meet on a common footing, but the prize of foreign trade goes today, as it has in the past, to the nation capable of winning it.

In accounts of the rise and fall of nations, we discover in each case a conflict between the two most powerful nations over the control of a trade terminus. Trade is a conflict between nations. War was always in the past the final arbiter in reaching a decision. The time has come when the nation must embark on the sea or in other words maintain its own merchant marine. To a nation having reached our present status of wealth and opulence, a merchant marine is said to be second only in importance to its soil. Merchant ships are also valuable instruments toward national defense. They supplement and render effective sea power. The United States Government today owns about 1,500 ships with a gross tonnage of 6,000,000. Our citizens own 1,900 ships of a gross tonnage of nearly 5,000,000—about 11,000,000 gross tons flying the American flag. If our circulating capital is to follow the fundamental rules of economics, then it stands ready to invest in foreign trade provided the investment is safe.

All political economists agree that the free use of circulating capital is the greatest civilizing factor in a country. To abridge the use of capital, we throw out of employment a portion of our productive labor, and by so doing, in turn, reduce the amount of capital to be used for production. The production of capital then is the production of labor. Without labor, capital is of no value. Production—labor, is the aim of a nation, capital is the means.

Labor and property.—The assets of a nation are said to consist mainly of two things, labor and property. Labor is alive, human; property is inanimate. In the development of governments, the original reason for the protection of capital has been lost sight of. Capital receives protection because labor is dependent upon it. Therefore, in the protection of property, or capital, a government renders service to labor, for upon capital, labor will always be dependent. There has grown up an idea that labor defines only those who work with their hands, and that all production is the child of mere muscle and brawn. This conception is totally untenable, as Bolshevik Russia has found to its sorrow. Both skilled and unskilled labor are helpless to produce unless they form part of an organization containing the fundamentals of

management, planning and administration, by the aid of which the wealth of knowledge of the world is added, and labor's hands guided scientifically in production. Labor actually comprises that of brain as well as that of brawn. Each is indispensable in production. To divorce them, production will disappear and wealth will vanish. Therefore, the protection of property is not our chief aim. The protection of labor is our chief aim. This is an important fact and it would be well if nations emphasized it in the administration of their laws. Property is protected for labor's benefit. Human things are vastly more important to the nation than the tools with which they work.

The most difficult situation facing the nation is that of maintaining its merchant ships. American labor—the man, hesitates to embark on the seas. He fears to trust himself beyond the support of his unions. He realizes that many of the laws affecting labor have been built upon the conception that property should be protected at the expense of labor.

This armed neutrality between labor and capital is a menace to the nation's continued prosperity. There is a danger of a great part of our circulating capital withdrawing itself from production and becoming unavailable for the use of productive labor. Labor and capital are interdependent and should realize it and our laws should be framed clearly upon the principle that in the protection of property, the aim sought is the protection of productive labor. When a nation fully understands these fundamental laws, and all legislation is guided by them, it is certain that the nation's manhood will return to the sea as it did in the nation's infancy.

Instruments of foreign trade.—That nations in their diplomatic relations are vitally concerned with trade is too evident to require demonstration. History will show that trade has been the cause of the greater number of international disputes. Oftentimes the issue has been clouded so adroitly in diplomatic camouflage that the fact has been difficult of recognition. Foreign trade is a complicated affair, mysteriously involved in ships, trade-routes, terminal ports, wharfage, warehouses, commercial firms, capital, banks, freight rates, insurance, port facilities, fuel, and many other factors almost too numerous to mention. There is, however, an old adage that for a nation to win a foreign market, its merchandise must be controlled from the source of the raw

material to the final step of placing the finished articles in the hands of the foreign buyers. Here is a many-linked chain. It has been demonstrated in this country that, having free access to raw materials, and dock-yard facilities and labor, we can build a fleet of merchant ships. This is an important first step in acquiring a merchant marine. But what is to prevent these ships from lying idle, swinging at their anchors, long rows of ugly, rusty hulls, in the currents of our rivers?

Our situation is this: Raw materials, manufactured articles for trade, and ships to carry them to a foreign market are controlled by our citizens, but we now find that this is not enough to give us commercial independence. Our citizens and our capital must own and control the entire cycle in order that no impediment can be put upon the free passage of our goods. If our foreign trade is to be profitable, the ships must voyage to distant markets, unload promptly and cheaply their merchandise, and refuel, refit, and return with their holds full of other merchandise for our own market or another foreign market across the sea. Our citizens and our capital must go as pioneers into the foreign fields of endeavor, beset with many difficulties. They will find others there, citizens of foreign nations—of competing nations—who will eye them with suspicion and jealousy—resenting their coming to cut into their profits. And on these distant shores, quarrels over trade must, if history is a guide, frequently occur between the citizens of the various competing nations. In these disputes, in the past, nations have been unable to resist the temptation of interfering, and in consequence, the Navy, the long arm of a nation reaching across the sea, came into usage upon the assumption of insuring fair play, backing up and supporting its citizens abroad in the peaceful pursuit of foreign markets.

For a correct economic balance, a commercial nation should buy foreign goods as well as sell to foreign consumers. A large volume of selling, or exports, with an inappreciable desire to buy or import, causes a depreciation of foreign credits, automatically raising the cost of our merchandise in foreign markets. A purely selling nation inevitably in time will shut itself out of a foreign market by reason of the higher price of its goods, permitting its competitors to control the field with their cheaper articles of trade.

Great sea powers in the past have maintained their share of the markets of the world by the use of their warships, potentially in peace, but dynamically in war. The principle thus has been established that a merchant marine is the cause and justification of a navy. Many examples can be found in the past, the quite recent past, where a superior sea power has driven its foreign competitor out of foreign markets and secured a trade monopoly for its own citizens.

The dictum that a strong navy is a preventative of war might be traced to the fact of foreign commerce, for weak sea powers do not attack strong sea powers to obtain their share of foreign trade, but on the other hand, strong sea powers have frequently gone to war against weak sea powers, and through the destruction of the warships and merchant ships of the enemy have gained dominance over rich foreign markets previously held by that enemy. A strong navy in the possession of a nation with a will to peace is a protection against war.

At this moment, there is hardly a national need more pressing than foreign commerce carried in our own merchant ships. Stimulated export and import would help every industry; the farmer, the manufacturer, and the miner. It would stabilize the economic condition of the country. The farmers of the country are finding their products will not render them fair profit, while the home consumers of the farmers' production are paying at a high rate for their food. Not long ago, our farmers were burning corn for fuel, finding it cheaper than coal; yet every country in Europe and Asia required the American farmers' products, but could not obtain them. The manufacturers and miners have slowed down production to prevent the home market from becoming saturated with their commodities and to keep up prices to the ultimate consumers. Many laboring men are still out of employment because of this retardation. Foreign nations need our goods, but there does not exist machinery to start the flow of exports toward them or their imports back to us. The steam to drive the engines of our foreign commerce must be supplied by our circulating capital. There is no lack of money or credit for work within the nation, but there is little or none willing to be used in building up our foreign trade.

Protection of foreign trade.—It is the belief of students of history that foreign trade must be protected by governments. When the Mediterranean Sea was the only known large body of water and the merchants of Venice, Egypt, Phoenicia, Rome, Carthage, and other ancient sea powers were competing in foreign trade, these merchants found that when their country's sea power was destroyed their foreign trade was lost. Merchants of weak sea powers obtained protection from stronger sea powers, sending their goods to foreign markets in merchant ships of the latter powers. Since those days, the idea of the warship for protection of oversea commerce has become an established belief. History in each century since that era has confirmed this belief. Before the World War, our foreign trade paid tribute to other nations in freight rates. Foreign merchant ships in large measure took our exports and brought to us our imports, This tribute aggregated many hundred millions of dollars each year. These foreign nations are still willing to perform this service. Today, we own a great merchant marine. The markets of the world are ready to receive our goods. Yet, our merchant ships lie idle, at a great expense to their owners.

Tradition is a moving force in men's minds. Those who have amassed capital hesitate to risk their holdings beyond the protection of their own government. Can this government protect its foreign markets where the doors are open or are slowly opening, and where there is a great—and soon will be a greater—demand for all those things which this nation can supply?

Competitive naval armaments.—In 1920, it seemed evident that the conditions among the great naval powers were paralleling those before the World War. The United States and Japan had laid down a very ambitious program in naval construction. The United States especially had fallen behind in battleship construction due to its efforts in other directions during the progress of the World War. The power and size of the fleet of Great Britain at that time was sufficient to maintain its traditional boast of the mistress of the seas. However, the navies of the United States and Japan, when their programs were completed, and provided no other ships were laid down by England, would take away a great deal of the British margin of superiority. In fact, the American fleet, under the 1916 program, in battleships alone, would have given

the United States a theoretical superiority in post-Jutland ships, both over England and Japan. Statesmen saw in this situation a menace to the peace of the world, and to stop competition in naval armaments a conference in Washington was called to discuss limitation of naval armaments.

The four-power treaty, the limitation of naval armaments and other agreements reached by this conference are now supreme law of this land. The pacts, if literally carried out, although not actually abolishing war, should go a long way toward preventing unnecessary wars. Open and frank consultations between powers in the event of an international crisis in the Pacific should be able to arrive at a solution by other means than by force of arms. In agreeing to these treaties, these four competitive industrial nations were each forced to make some manner of naval strategical sacrifice. The sacrifices were not algebraically equal. The geographical situations of the several nations made it imperative that certain of them were called upon to give up more than others. The relative quantity of sacrifice of each nation also may be said to represent the earnestness of that nation to make the conference a success.

Japan made the smallest sacrifice. This mostly was due to the fact of its geographical situation, for that nation's military and naval power is concentrated at the strategic center of the area known as the Far East.

America agreed to remove itself from a theoretically strong position in the Philippines and Guam, and retire its naval power behind the fortifications of Hawaii, 3,500 miles from the Japan coast. Those initiated knew that this sacrifice of America was but a promise for the future, for the United States had actually given up some years since its potentially impregnable positions in the Orient by refraining from developing a modern naval base in its far eastern possessions suitable for its fleet in the event of war in the western Pacific. America's sacrifice amounted, therefore, merely to giving public sanction to continue this inactive policy of developing naval power in the Far East. The Congress seemed to have no intention of spending large sums of money for such a purpose. The advantage to Japan of this definite understanding, however, was of great moment. Japan professed in her press a fear that some day America would awake to the advantage of

commercial and naval bases in the Far East; that Guam might develop into a second Heligoland, and that Manila might be created into a Hong Kong, with the addition of being modernized to care for not only a large active merchant marine, but also the largest super-dreadnaughts. This apparent fear of Japan was but a reflection of its own mind, for it seems certain from her history that if the two nations were reversed in position, both the Philippines and Guam would have long since become impregnable naval bases for a fleet. Militaristic Japan would not have allowed them to remain so long unguarded. The advantage to Japan, therefore, of the official understanding that the United States would not improve its far eastern bases was of great moment. It gave Japan something tangible. Once America agreed to abandon the possibility of a great naval base in the Far East, then Japan needed no longer to consider the menace of America's sea power in her own naval and commercial expansion in that region. This was a distinct gain to Japan's foreign policy.

England agreed to remove her sea power to Singapore, about 3,000 miles from the Japanese mainland. Hong Kong, lying only 1,800 miles from Japan, by the treaty is to lie fallow for future naval purposes. At least, its gun defenses and facilities for a fleet base are to be permitted to become obsolete through the passage of time, which amounts to the same thing. This retirement of England behind the defenses of Singapore removes for Japan the menace of the British fleet in her own waters.

France sacrificed little or nothing, for her naval power has never been a factor in the Orient.

In the actual scrapping of capital ships, Japan's sacrifice was small compared to that of the United States, while England merely sacrificed her plans, as no new capital ships were building. To sum up the sacrifices in the Limitation of Armament Treaty, Japan sacrificed a few ships and there is the end of it, while America not only sacrificed what would have made her a great sea power, but further denied herself for all time the power to use safely her capital in developing the resources of the Orient. Great Britain sacrificed no warships. She consented to equality in tonnage of capital ships with the United States, but knew full well that for years to come, she could be assured that her fleet would be superior in fighting power, more fully manned and trained, than the Ameri-

can fleet. British statesmen seem to have been right in their psychology.

American thought seemed to consider that the spirit of the treaty limited all types of naval ships, even though the text of the treaty placed a limitation only on capital ships and airplane carriers, and since the treaty no new ships have been laid down by America. Japan, on the other hand followed the letter of the treaty, and for reasons explained in the Japanese press, to give employment to labor at dock yards, used the money saved on battleship construction to increase other types of warships not limited by the treaty. In consequence, Japan has more than doubled all other types of warships in the last four years, thus giving her a great preponderance over America in fleet strength. Some in this country seem to blame Japan for these acts, but she was merely following a well planned policy of naval expansion curtailed in only one direction by reason of limitation of battleships. When one considers that the fighting power of a fleet, resting primarily on battleship strength, is rendered innocuous by a weakness in the auxiliaries or weapons through which the nation's might on the seas is exercised, such a great increase in auxiliaries as has been made by Japan is in effect an increase of the number of capital ships. It is of greater importance than the elevation of guns. The light cruiser, the destroyer, the submarine, and the airplane, are virtually as much a part of the armament of the capital ship as is the gun. A battleship cannot use its guns and torpedoes effectively without the aid of these auxiliaries. To increase or decrease the number of auxiliaries of a fleet increases or decreases the potential power of its battleship. Therefore, Japan, by doubling the number of its auxiliaries, has in effect increased the fighting power of its battleships. No arithmetical calculation based upon conventions can conclusively show the true increase of fighting power consequent upon an increase of auxiliaries, for these auxiliaries are capable of being utilized in many services outside of a fleet action where their work will act to defeat the strategy of an enemy and destroy its power for sustained war operations. When we consider our country's commercial interests and its possible expansion to employ our capital, our relative weakness in auxiliaries looms large.

England, influenced by her naval tradition, will look to the effectiveness of her fleet, for she has lived by that fleet for centuries. Japan, an oligarchy, a nation of limited suffrage, guided by a highly trained general staff, has given scant heed to the voices of sentiment dealing with disarmament.

America, the idealist, a nation of over 100,000,000 people that within a year put 5,000,000 men in the field and spent over a quarter of a hundred billion dollars to defeat militarism in Europe, had become a monster of uncertainty to the Japanese press. They did not fathom the psychology of so much professed virtue. The most obvious thing was to cut this nation off from crossing the Pacific with its crusaders. This has been effectively accomplished in the treaty.

The disarmament conference was successful because the results were dictated by America. We sacrificed our commercial hopes for the future to arrive at an agreement for disarmament. Unless we succeed in creating a world conscience, outlawing war, and submitting all questions to arbitration, we shall suffer in our foreign trade through our naval weakness. If the pre-war ideas should remain, we shall find ourselves virtually cut off from the markets of the Orient, and find barriers raised in foreign quarters against the entrance of articles of our production. The United States may therefore soon have to return to its old time position as a hermit nation commercially, give up the sea, and retire within its frontiers. The one outlet for trade possible for a nation with a weak sea power is, in our case, the American continent, and this can be achieved by better transportation facilities by land to the countries of South and Central America.

The battle cruiser.—The American Navy always will mourn the absence of battle cruisers in its fleet. Lacking this type of warship, it becomes a duty to supply in some other type a means of minimizing this advantage of other sea powers.

Sir Julian S. Corbett, in his first volume of the series *Naval Operations,* gives an illuminating account of the fast German commerce raiders. At the beginning of the World War there were two armored cruisers and ten fast cruisers operating against England's far-flung merchant fleet. These dozen ships, subsisting upon resources captured, and destroying every enemy merchant ship

encountered, became a serious menace to the British vaunted control of the sea. It became an imperative task for England to run down and destroy each of these raiders. Sir Julian reports that at least five battle cruisers, four battleships, twenty armored cruisers, ten light cruisers, and a considerable number of converted merchant ships were employed at one time or another on this duty. The damage accomplished by these speedy German ships at large on the trackless ocean was great and the last ship was not run to earth until four months after war had been declared.

In reading the official records, one is seriously impressed by the almost insurmountable difficulties in communication experienced by the admirals in command of the British searching squadrons and ships. With all the advantages of their own, allied and neutral cables and wireless stations, important information to them was hopelessly delayed. Many vital messages were received by the British leaders too late to be acted upon or so late that when measures were taken, the enemy was far out of reach. One thing stands out most strikingly—the British Navy's unpreparedness to cope at once with such a situation.

Battle cruisers accompanying scout cruisers with long radius of action would be far more effective today than the vessels that Germany utilized for raiding. Such a squadron, its ships acting singly but within supporting distances, would be a power that could not be overcome by the American Navy. It could overwhelm any force fast enough to come up with it.

When battle cruisers lie in the battle fleet, they act as a fast wing, but should the battle fleet be not menaced by the enemy's battle fleet, the battle cruisers become available for eccentric missions. It seems unnecessary to dwell at length upon the possible use of battle cruisers upon an extended line of communications. With these rovers on the seas, a long line of communications to our fleet would be practically impossible. Convoys escorted by battleships sufficiently strong to cope with a concentration of battle cruisers would become imperative, but this would force this country to divide its forces and that might entail defeat in detail.

Should our merchant ships carrying our products be spread over the seven seas, with what shall we protect them from raids of a like force of warships? England used nearly seventy fighting ships to run down twelve lightly armed German raiders. What

type have we at hand to prevent battle cruisers of an enemy from driving off the seas if not destroying our entire merchant marine?

The aim of modern war.—Modern war is aimed not at armies and fleets, but at the nations behind those instruments. In battles between armies, the object of opposing generals is to cut off the enemy's lines of communication. Cutting these lines of communication forces an army to retire in order to establish new lines of communication. An army with lines of communication in the hands of its enemy cannot fight, for it would soon run short of ammunition and food. A fleet's lines of communication are just as tender.

To accomplish the defeat of a nation, modern strategy aims at cutting the lines of communication of the enemy nation, that is—to shut it off from all commercial intercourse with the outside world. Few nations can manufacture everything that is required in war, and fewer produce sufficient raw material and food-stuffs to support the civilian populace and its fighting forces. Even when a nation is opulent as we find ourselves today, it will require the continuous operation of its sea trade with neutral nations. Such trade often is the life blood of a nation at war. By this trade flow the surplus articles of manufacture and surplus food and other things, the return stream bringing gold or credits from the outside world. By trade, the nation's credit is maintained. Nations at war must strive to maintain the volume of trade as during peace. The very same economic factors are involved. If Germany had succeeded in cutting the lines of communication of Great Britain, that nation soon would have met defeat on the seas. In our case, we might manage for some time—possibly years—but what would be the effect upon our finances? Financial ruin would be rife in the land. A body blow would have been struck at the nation's morale.

At the height of her power in 1914, Germany owned five battle-cruisers and some thirty fast cruisers. Great Britain at the same time had ten battle cruisers and some fifty cruisers. Consider the havoc the German battle cruisers and cruisers might have accomplished if they had gotten safely to sea, and then have raided the sea lanes converging toward where the titanic land struggle was being enacted in France and Belgium. What prevented this terrible catastrophe from occurring? It was not the British battle-

ships but the ten battle cruisers under Admiral Beatty that closed the gates to the open seas. If Germany had had superiority in battle cruiser strength, our Army in 1917-18 could never have been transported to France. Can we wonder now at the great concern of Great Britain after losing in a single battle three battle cruisers? By one stroke, from a superiority of five, England's superiority dwindled to a superiority of two.

The lesson in all of this is that we learned too late the terrible value of speed in our capital ships. The value of speed with power is great tactically, but strategically it is commanding. Our peace maneuvers have shown the importance of a fast wing and the difficulty of meeting it with anything but speed. Against this power, tactically or strategically, what have we to oppose?

In reading the *Crisis of the World War* by Winston Churchill, one cannot but be impressed with the belief that the World War, or at least England's share in it, was made certain by the psychological attitude of the British nation and the British Navy, beginning when Germany laid down its first naval law. This attitude became an idea and then crystallized into a certainty that Germany meant war. The eyes of England were ever turned fearfully upon this budding naval power and this idea became a conviction at least as early as 1912 when Churchill became first lord of the Admiralty. A similar conviction undoubtedly was in the minds of those who advocated the Washington disarmament conference. To stop competitive warship building that had produced the World War for England was the object. We now appreciate that that object was not quite reached and the failure to achieve full success was due to the fact that no nation except the United States was willing to accept an entire navy cut to a definite size and pattern.

Competitive warship construction between rival commercial nations must in the end, if history is a guide, lead to war. There can be no gainsaying this. Yet, on the other hand, how will a nation be able to know that all goes well with its navy unless some comparison with a possible enemy is made? A nation might lay down a program of warship construction in the belief that the numbers and sizes are based upon purely defensive factors. Yet, every defensive warship must, when war comes, be used offensively if success is to be achieved. The spirit of the offensive in war is

half the battle. Therefore, in estimating the size and power of our Navy for defense, we must measure it against those navies with which our Navy may some day come in collision. Unfortunately, there seems no other way.

The submarine.—It has been stated often that the submarine is the weapon of the weaker naval power and that it is a purely defensive weapon. This might have been true before the art of submarine construction had developed a subsurface vessel nearly as large as a light cruiser, armed with as heavy a gun, carrying both torpedoes and mines, and with a cruising radius capable of crossing the Pacific or Atlantic several times without refueling. A fleet of submarines of this type, efficiently manned, well based, and well supplied, must act as a great deterrent to another nation not so well provided. This is conceived to be the weapon best adapted to our strategical situation. It cannot, unfortunately, protect our merchant marine, but it would be an effective opponent on the sea and could destroy the lines of communication of an enemy.

It is now well known that the submarine, as a weapon in the World War, was not defeated. Again, the dictum that "ships do not fight, but men," was proved. The personnel of the German submarine service suffered a breaking down of morale and this acted to defeat the submarine on the sea for the time.

The battleship and battle cruiser cannot fight the submarine for they live in different mediums as it were. It is foolhardy for a big ship to remain in the vicinity of a submarine submerged. Its location is not known and the big ship is helpless to avoid a torpedo when fired at short range.

Battleships and battle cruisers, the monarchs of the sea, are as helpless before the submarine as a prize fighter is helpless before a burglar with an automatic pistol drawn. The prize fighter cannot dodge a bullet. In the World War, the German submarines concentrated in their operations upon the foci of trade. England's answer was characteristic of her traditional sea strategy—a concentration of surface ships at the foci of trade, but although in the past this method had been successful, it failed signally with the submarine.

An enemy that fights in the open on the surface can be met and defeated by a superior surface force, but one that lurks beneath the sea cannot be subdued by those familiar means. A new up-

to-date method of attack was necessary. A well known principle was being applied in the old way without appreciating that although the principle was applicable, yet the method of its application was faulty owing to the changed characteristics of the enemy.

The convoy system was the remedy at this time. This method collected all merchant ships into a compact body easily guarded by fast warships. The convoy method could not prevent merchant vessels being torpedoed, but it forced the submarine to come to the convoy where the ships to fight the submarine were concentrated. Once the submarine had fired its torpedo and betrayed its position, then some offensive action was possible. The destroyer laying a depth charge barrage was the weapon most efficient in this fight against the unseen power.

The submarine cannot gain command of the sea against a superiority of surface warships, but it does make such command precarious and doubtful. It cannot be blockaded as readily as the surface ship. Its mere presence on the ocean forces all vessels to expend nearly ten per cent additional fuel in zigzagging.

Our mercantile policy seems to be heading toward the idea that American goods should be carried in American ships. Our surface war fleet possibly will never be sufficient fully to protect a merchant marine capable of carrying our trade. In expanding our merchant marine, we should be particularly cautious as to our methods and the extent of that expansion. We must realize that the life blood of the British Empire is its merchant fleet; that anything that injures or decreases the success of that fleet, by that much decreases the virility of the British Empire to hold itself together. Every nation will fight for its life, even against a brother. Peace between England and America should be a fundamental policy of both countries. National friendships are based, not upon consanguinity, but upon interests. Interests naturally are often conflicting, but if the will to get along is fundamental, this will guide policies along the narrow path of peace.

Should the United States acquire a formidable fleet of cruiser submarines, it will have a powerful argument in settlement of disputes by other means than war.

Many believe that the submarine is the coming type of capital ship. This was Sir Percy Scott's dream and no great stretch of

the imagination is necessary to picture a submarine battleship or semi-submersible battleship of high surface speed, carrying weapons of the largest caliber. The evolution to this will come if it does at all gradually and progressively. Is the submarine the answer of the United States to the battle cruiser menace, and cannot it be instituted without arousing the monster of competitive armaments? Other nations may have already arrived at this same conclusion. The fact that one nation has built over a score of these large submarines since the Limitation of Armament Conference seems to point to such a conclusion.

The capital ship.—There is constantly recurring the thought that the battleship is doomed and that nations should not build any more of this type. The principal arguments advanced against the battleship concern developments of the airplane and the submarine. To replace the battleship, the naval doubters advocate airplane carriers, while the most radical of the Army critics go the whole distance and advocate airplanes and submarines only. It would appear that these prophets confuse the means with the end in naval warfare. The end in naval warfare is the control of the sea highways, and the means are the weapons employed for the purpose. The naval airplane as yet is dependent upon a floating base and these bases are supplied by airplane carriers. Airplane carriers are to all intents and purposes battle cruisers with airplanes replacing the big guns in armored turrets. They will be subject to attack by gun fire, mines, bombs, and torpedoes. Meeting a battle cruiser, an airplane carrier must rely upon its airplanes first, and then its speed. A single battle cruiser without air defense might fall a victim to airplane bombs, and this possibility must be met by aircraft defense inherent within the battle cruiser—guns and airplanes. Meeting a similar type of ship, a duel will be fought first in the air, but in the end, the ships themselves may fight, and other things being equal, the one with the bigger or larger gun armament will win. If navies should scrap their battleships and battle cruisers, replacing them with airplane carriers, and if evolution is not stopped by agreement between nations, we shall find that airplane carriers soon will be "dressing themselves up" with big guns.

The fact is that the naval airplane is merely a new sort of projectile, carried by a surface ship. It must obey the law of gravity.

Eventually, it must come down from the air and must have a place to alight or else be lost.

The air is without limits and the entire control of this medium is for any one nation in war a difficult task. The sea is almost without limits. Commercial nations have fitted up strategic localities to be used as points of support for their warships in winning control of the sea, and the big surface ships, concentrated in fleets with their auxiliary weapons, are mobile points of support for the same purpose. We must bear in mind too that the medium of the air is too light to serve except as a medium of limited transportation. Merchandise will always be transported more cheaply on the sea. The bulk of the world's commerce will be carried in surface ships.

The idea that the airplane carrier will replace the battleship can be translated into meaning that the battleship will have added to its armament airplanes and more airplanes as their reliability increases. The latest design of battleships for Great Britain use the entire after part of the ship as a flying-off deck, all turrets being forward. The battleship may merge into a battle cruiser and the battle cruiser may merge into an airplane carrier, that is, it may carry more airplanes than guns, but the basic idea of the mistress of the sea being a large, heavily gunned, high speed, reliable fighting ship is as fundamental as ever. A fleet of such vessels, reinforced by all types of necessary auxiliaries, which are actually an extension of the armament of the battleships or battle cruisers themselves, will constitute the main fighting power on the sea, and will be able to fulfill the mission of destroying the enemy's warships, his merchant ships, and protecting its own commerce during war. As the airplane increases in reliability, in radius of action, and in carrying power, the number of airplanes in the battle fleet will increase. The characteristics and armament of fighting ships of all types will conform to the known destructive power of the new weapons. The belief that a revolution in type is upon us is merely a dream of those who but touch lightly the high spots of history. They speak without full knowledge.

Nations conquered nations first with armies. Ships in these earliest days merely offered the means of transport for fighting men by water, thereby saving many miles of travel through hostile country wherein roads did not yet exist. The object of these wars

was plunder. Later, trade between nations sprang up when easier means of transportation between them was established by roads and by ships. Cupidity yet actuated nations to wage war upon one another to gain the rich trade of a rival. Originally, soldiers manned the ships that carried the fighting men, but when sails came into use, rendering greater distances by water possible, a new art or science gradually came into being, that of seamanship. Seamen thereafter manned and navigated the ships while the soldiers fought the ships if occasion arose in transit. Ships carrying goods for trade were manned entirely by seamen. For the protection of these trading ships, warships were created. They were navigated by seamen and fought by soldiers. It was not until about the eighteenth century that soldiers on warships were finally displaced by man-of-war's men, seamen who both navigated and fought the warships. In the sixteenth and seventeenth centuries, the globe was explored by ships fitted out by the militant powers of Europe. The vessels traveled to localities heretofore unknown by the civilized world. In due course, merchant ships followed these explorers and world trade began. The explorers proved to the merchant that great wealth lay beyond the horizon. Since these earlier days, the character of warships and merchant ships have undergone great changes, but the underlying motives have remained the same—merchant ships for trade and warships to keep trade in security wherever the sea permitted transit. The seaman's profession, comprising as it does many of the sciences, requiring initiative and boldness, and physical ruggedness, is one mastered by a small proportion of the people of the world.

The naval airplane is a limited ship of the air as the submarine is of the depths of the sea. Each, according to its capabilities, must fight for the protection of its merchant ships floating on the surface of the sea. In a sense, each is a missile. One ascends in the air from the surface of the sea, while the other plunges beneath the surface. Each must return to the sea's bosom.

The strategy of the surface of the sea is binding to both the airplane and the submarine for each must give loyally to the mission —control of the surface to keep the sea open for trade.

War on the sea must, to succeed, be planned. Every weapon must be indoctrinated—know the part it must play. Even a fleet comprising all types of ships is virtually a projectile fired from a

base of supplies. It must eventually return to that base for refuel and refit. The base of supply may be likened to a gun. A single ship, a warship, or a merchant ship, may also be likened to a projectile fired from a base of supply. An army on shore likewise is dependent upon its base of supplies and can travel only a limited distance from that base. Lines of communication are the vital factors in war.

Imagine only merchant ships on the surface of the sea, airplanes above the surface, and submarines under the surface and that no other types of warships exist. Imagine further that airplanes have become so completely reliable as to be capable of flying between continents without the support of floating bases. The airplane, from its points of vantage in the clouds, will attack the surface merchant ships of its enemy, its enemy's bases of supplies, its factories, and its cities. The submarine, from under the sea, will add in the destruction of enemy's surface merchant ships. Necessarily, this destruction both from the air and from under the water will be reciprocal. Great battles in the air and under the sea between like types of warship will result. Very soon, each nation must consider what it is gaining in this race of destruction. Before either antagonist has won a decided advantage, imagine a large merchant ship, armed with guns and supplied with airplanes, appearing on the sea. It is surrounded by fast light vessels, destroyers. Enemy airplanes sighting the newcomers attempt to destroy them with bombs. From the merchantman's deck airplanes ascend while a heavy shell barrage meets the attacking planes. A submarine approaches to attack and upon showing its periscope is attacked with a depth charge barrage quickly and effectively laid by the destroyers. Other merchant ships with heavier guns appear, carrying more airplanes, accompanied by more destroyers. These large merchant ships may scour the seas, sinking the enemy's merchant ships, and with their planes ward off attack by enemy planes. The light fast warships hunt out and destroy the submarines. Finally, the nation with the converted surface warships and destroyers wins control of the surface of the sea. To meet this condition, the opponent must follow suit in arming its own merchant ships. Battles rage between armed merchant ships, singly and when concentrated into fleets. Meanwhile the air menaces continue. There will grow up in the midst of this air-

plane menace a surface navy with guns, ever growing bigger until both nations, if time permits, have returned to the conditions before they scrapped their surface warships.

A law of which the prophets know not is working mysteriously "to shape our ends, rough hew them as we will."

The airplane is not the sole weapon for conquest or for defense. It is not a prime weapon, merely an auxiliary one and one most useful on the sea when supported by surface ships.

The big surface ships with all their auxiliaries are the ultimate power of a navy to keep the surface of the sea open and safe for the nation's use.

The advocates of a united air service speak without thorough consideration of the problem before the Navy. Nations will fight for the control of the air, but this control will be for a specific purpose, and the missions at sea will follow the ancient old laws of strategy and tactics.

Within the recollection of the senior officers of the Navy, the battleship was said to be doomed upon the advent of the destroyer. It was shown that the destroyer could steal upon the battleship at night and that the battleship's search lights and guns were impotent to prevent the destroyer from destroying the battleships. The anti-torpedo defense guns, or those guns which could be fired quickly could not reach with sufficient accuracy the point from which the destroyers would fire their torpedoes. The solution was to advance the guns toward the point of attack. This predicated taking the guns off the battleship, only figuratively, and putting them onto something else. The decision naturally was to put them on destroyers, and the destroyers in a screen about the battleships was the answer to the destroyer attack upon the battleships. In the same way, when our anti-aircraft guns fail by day or night to form an adequate defense for the battleships against airplane attack, we must advance these anti-aircraft weapons in order to defeat the attacking airplanes. The answer is naturally to mount these devices in airplanes. It seems to be the opinion that the fleet that can control the air over the enemy's fleet and its own fleet will win, other things being equal. By means of this control we may fire our airplane projectiles while the enemy cannot. Therefore, an important weapon is denied the enemy's fleet. If a united air service should result from the present agitation, the Navy

would find itself denied the absolute control of a weapon in design, numbers and operation, needed both for offensive and defensive action.

Scout cruiser.—The scout cruiser might be called a small battle cruiser. Its uses in winning the control of the sea highways are many and vital. As a commerce destroyer, it has no peer. It also serves in the rôle of a destroyer destroyer. Armed with airplanes, and supported by battle cruisers or battleships, it can gather information of enemy movements and dispositions, and in the tactical battle, break up a destroyer attack or lead in such an attack upon the enemy.

The quantity of sea power.—The sea highways are our merchant ships flying our flag, carrying our surplus production to the world, and bringing to us the surplus of other nations that are needed in our economic life. A navy is for the purpose of protecting and keeping open these sea highways, in peace and war. The types of naval ships and their development are a purely naval concern. The number of these ships is a national concern. When we insure our house, we insure it for its value. When we insure trade and our economic prosperity, we should insure it for its value. Remember that a fleet that cannot win is in the class with a gun that cannot reach the enemy. The only fleet that is at all valuable is one that can serve the purpose. If in the event of war, the Navy is unable to protect our sea highways, these highways for us will be destroyed; our surplus production will not find an outlet and will be thrown back upon the home market; the vital imports will not arrive; furthermore, productive labor within the country must decrease and men be thrown out of employment; the American dollar will depreciate and, if we lose the war, we also lose our present economic position in the world, our credit, and our self respect as a nation to say nothing of the respect of other nations. From an economic standpoint, the question is—"Is a navy worth while?" And if the answer is "Yes," it must be a navy equal to our needs and commensurate with the wealth it must guard.

LENGTH OF SERVICE RETIREMENT vs. AGE IN GRADE RETIREMENT

By Captain J. K. Taussig, U. S. Navy

Foreword.—One year ago the writer made a study of our promotion and retirement laws which was published in the April, 1924, issue of the Naval Institute Proceedings.

The first conclusion reached was that: "It is now within the power of the Selection Board to insure to every officer who is in his normal place on the list a fair opportunity for promotion."

The next conclusions were: 1. That some form of selection is essential for the efficiency of the naval service.

2. That for the upper grades selection *up* is better than selection *out*.

3. That age-in-grade retirement is better than length-of-service-in-grade retirement.

As the present law provides for all three of these, a further analysis was made to find out, if possible, what really is the matter with the law in its effects on future retirements and promotions. It developed from this analysis that as soon as normal conditions are reached, which will be shortly after the full authorized strength of 5,499 line officers is attained, the present law will be found to be unsatisfactory in the following respects:

(1) Large numbers of officers must be retired for age in the grades of captain, commander, and lieutenant commander, the annual average numbers being twenty-five, thirty and sixty-one respectively.

(2) The average ages of officers on attaining the various grades will be considerably higher than is conducive to best efficiency.

(3) The numbers of years required for officers to pass through the various grades will be so irregular as to reduce efficiency and to make administration difficult.

(4) The numbers of officers in the various grades will not conform to service requirements.

It then became evident that these approaching unsatisfactory conditions were due to:

1. The percentages authorized in the various grades are not correct in all cases.

2. The ages fixed for retirement in the grades of commander and lieutenant commander are not correct, resulting eventually in officers reaching these grades at too advanced an age for the best efficiency, and resulting eventually in the time spent in these grades being too short for all officers to get in the necessary sea service requirement for promotion.

3. There is no provision for elimination in the lower grades.

In endeavoring to find the remedies for the approaching unsatisfactory conditions, the more deeply the subject was gone into the more intricacies were found, and the more involved it became. This led to the making of two curves—one showing the line of the Navy today, and the other showing what the present law would actually accomplish when normal conditions are reached. This latter curve shows that eventually the flow of promotion under the present law will be anything but smooth and satisfactory. In searching for the remedies it was found practicable, while still using the basic elements of our law, to make a much more satisfactory curve of promotion simply by ascertaining the proper ratio between the numbers in the various grades, together with the proper ages in these grades and the length of time that should be spent in each grade.

Not thinking of the feasibility of working out the mathematical formulas for obtaining such curves as has since been done by Captain Roy C. Smith, U. S. Navy, and published in the October, 1924, PROCEEDINGS of the Naval Institute, my figures were obtained through the application of the method of trial and error. They differed materially from the mathematically-worked-out result only in one respect—the number of new ensigns required each year to insure the line of the Navy being maintained at its full authorized strength.

The future working of the present law and its workings under the changes proposed as a result of my study have since been worked out in accordance with the formulas deduced by Captain Smith. These results, together with the situation as it is today, are shown in the following table:

THE LINE OF THE NAVY

	Percentage in Grade			Numbers in Grade			Average Ages On Attaining Grade			Numbers of years in grade			Annual Numbers of forced retirements			Percentages of forced retirements		
	Present Law		Proposed by J. K. T.	Present Law		Proposed by J. K. T.	Present Law		Proposed by J. K. T.	Present Law		Proposed by J. K. T.	Present Law		Proposed by J. K. T.	Present Law		Proposed by J. K. T.
	Last Year	Normal Conditions		Last Year	Normal Conditions		Last Year	Normal Conditions		Last Year	Normal Conditions		Last Year	Normal Conditions		Last Year	Normal Conditions	
Rear admiral	1	1	1	46	55	55	54	55	55	9	8	8	4	6	6	8.7	11.8	11.8
Captain	4	4	4	182	220	220	45	49	47	10	6	8	0	25	16	0	11.4	7.3
Commander	7	7	8	321	385	440	39	44	40	6	5	7	0	30	25	0	7.8	5.7
Lieutenant commander	14	14	18	638	770	990	32	39	33	6	5	7	1	61	55	0	7.9	5.5
Lieutenant	32.5	32.5	..	613*	1787	1564	27	30	28	6	9	6	0	0	76	0	0	5.0
	...	.....	..	828	.....	..	...	.....	..	...	.....	..	...	.....	..	...	.....	..
Lieutenant (jg)	...	.....	..	270*	1443	1070	25	25	25	2	6	3	0	0	..	0	0	..
	...	.....	..	568	.....	..	...	.....	..	...	.....	..	...	.....	..	...	.....	..
	41.5	41.5	69	....	.....	..	...	.....	..	...	.....	..	...	.....	55	...	.....	2.5
Ensign	...	.....	..	970	839	1160	22	22	22	3	3	3	0	0	..	0	0	..
Totals or Averages	100	100	100	4436	5499	5499	...	.....	..	7†	7†	7†	5	122	233	0.1	2.2	4.2

* Non-graduates of the Naval Academy.

† Lieutenant (jg) and ensign considered as one grade.

The only changes in the present law necessary to produce the proposed conditions shown in this table are:

1. Increase the authorized percentage in the grade of commander from seven to eight per cent.
2. Increase the authorized percentage in the grade of lieutenant commander from fourteen to eighteen per cent.
3. Lump the authorized percentages in the three lower grades and decrease their total by five per cent.
4. Reduce the age for retiring commanders from fifty to forty-eight years.
5. Reduce the age for retiring lieutenant commanders from forty-five years to forty-one years.
6. Promote lieutenants (jg) to lieutenant after serving three years in grade.
7. Provide for some eliminations in the three lower grades.

My final conclusions were that these slight changes in law would result in:

1. Increased efficiency throughout the naval service.
2. Fairer and more just treatment for the individuals involved, both for those who remain on the active list and for those who are retired or discharged.
3. Considerable financial saving to the government.

These are the three big factors that must be considered in any scheme that may be proposed.

In reaching all of the foregoing conclusions, "length-of-service-in-grade" retirement was analyzed as a practical substitute for age-in-grade retirement, but no consideration was given to the question of "total-length-of-service" retirement. This method of elimination had not been thought of, nor was it heard of until some time after the published study had been completed. This new method of retirement having been proposed, and being favorably considered in many quarters as the best substitute for age-in-grade retirement, it becomes necessary to supplement the previous study in order to ascertain whether the conclusions reached therein still hold.

The New Study.—As a basis for comparison with the present law, the following lengths of service, based on date of graduation from the Naval Academy, are used for forced retirements, these corresponding to those which have been proposed: captains after thirty-

five years' service; commanders after twenty-eight years' service, and lieutenant commanders after twenty-three years' service.

The first thing noted is that the lengths of service here proposed for retirement in the various grades correspond exactly, for the officers of average age, to the present lengths of service which they will have completed when they retire for age-in-grade under the present law. Therefore, whatever effect this change in law might have on certain individuals, it leaves the line of the Navy as a whole in exactly the same unsatisfactory condition as does the present law. In other words, this proposed change does not reduce the very large numbers of officers that must each year be forced out in the grades of captain, commander, and lieutenant commander. This is because these totals are absolutely fixed by three factors: (1) the percentages in grade; (2) the lengths of service in grade, and (3) the average ages in grade: none of which are altered in the proposed change.

Therefore, by making this change the line of the Navy will eventually reach the same condition as it will under the present law, which condition will be far from satisfactory, as can be seen by a perusal of the foregoing table.

The only difference found between the results of the working of the present law and the effects of the law with the proposed change, is in the possible effect on certain individuals. By a change to total-length-of-service retirement a few of the comparatively older officers would be given additional opportunities for consideration by the Selection Board as eligible for promotion, while a greater number of their younger contemporaries would have fewer opportunities for consideration by the board than they have at present. While this would bring about a partial reversal in the relative number of opportunities afforded various officers who are contemporaries, it would seem that there would be very little change in the actual chances of promotion of these various officers. The oath of the members of the Selection Board requires selections to be made, "Having in view solely the special fitness of officers and the efficiency of the naval service." Now that the time is approaching when large numbers of captains, commanders, and lieutenant commanders must be retired, it is believed the board will select the most efficient and the most valuable for the naval service from a block of officers in each grade which includes all those who if

not promoted will retire without an additional opportunity for selection.

It is apparent that a change to length-of-service retirement will give to a few captains who are now old for their position on the list additional opportunities for consideration for promotion, and that therefore, the change may appear more fair to them. On the other hand, it is also apparent that this same change will give to a larger number of captains who are of the average age or below the average age of their contemporaries fewer opportunities for consideration for promotion, and that therefore to them the change may appear unfair. It would seem, then, that this question should not be decided simply by the effect on a few individuals. The effect on the service as a whole should control.

It has been pointed out that insofar as total forced retirements are concerned, the contemplated change in law will not remedy the unsatisfactory situation which is approaching. That is, the adoption of length-of-service retirement does not eventually prevent the annual forcing out on an average of twenty-five captains, thirty commanders, and sixty-one lieutenant commanders. It does not prevent the approaching condition where commanders and lieutenant commanders will serve only five years in each grade, thereby making it impracticable for all of them to meet the requirement of two years sea service. It does not prevent the approaching condition where the average ages of officers on reaching the grades of lieutenant will be thirty; lieutenant commander, thirty-nine; commander, forty-four, and captain, forty-nine. We are, under the present law, approaching a situation where, in a comparatively few years, the youngest lieutenant commander on the list will be older than the oldest lieutenant commander on the list now. The proposed change in the law does not prevent this situation, nor does it prevent other similar unsatisfactory situations which can be pointed out as approaching. In fact the change from age-in-grade retirement to length-of-service retirement does not remedy in any way the real defects in the promotion and retirement laws as they at present exist.

The remedy for these approaching unsatisfactory conditions in the line of the Navy can be found only by making adjustments in the percentages of officers allowed in the various grades and by changing the ages for forced retirement in the various grades so

that there will be a more satisfactory adjustment of the lengths of service to be spent in each rank and of the number of eliminations that must take place. This necessitates, (1) an increase in the numbers of commanders and lieutenant commanders over those now authorized with a corresponding decrease in the lower grades; (2) a decrease in the ages now prescribed for forced retirements in the grades of commander and lieutenant commander, and (3) the providing for eliminations in the lower grades.

The increases in the percentages of officers in the grades of lieutenant commander and commander are necessary not only in order to smooth out the promotion and retirement curve, but they are primarily essential to a correct distribution of officers in accordance with the actual duties to be performed. It is evident that the easiest way to relieve the pressure all along the line would be to make an increase in the percentages now authorized in the grades of captain and rear admiral. However, no increases have been recommended in these grades because it is believed impracticable of accomplishment.

A decrease in the ages now prescribed for forced retirements in the grades of commander and lieutenant commander will insure the officers reaching these grades at the proper ages for best efficiency and, at the same time, insure the average age throughout the grades being that best for efficiency. The present retiring age for captains who are not promoted insures officers reaching the grade of rear admiral at the proper age. Furthermore, by reducing this retiring age, the length of service in the grade of rear admiral would be increased to nine or more years, so long as the law is retained which retires rear admirals at the age of sixty-four. However desirable it may be that flag officers serve long periods in that grade this can only be accomplished by making sacrifices lower down the list. This, it is believed, the efficiency of the service as a whole would not warrant. Therefore no change is recommended for the present retiring age for captains who are not promoted.

Insofar as the promotion of captains is concerned, one of the chief sources of inequality of opportunity is due to the irregularity in the annual number of retirements in the grade of rear admiral. With a maximum strength of fifty-five rear admirals, with captains retired on reaching fifty-six years of age, and with rear admirals retiring at sixty-four years of age, the average length of

service for rear admirals will be eight years, and the average number of vacancies created for captains will be seven. This situation will be the same even should the change be made to length-of-service retirement. But, owing to the variation in age of the rear admirals, there will be some years where only two or three will retire, thereby placing the officers who happen to be at the top of the captains' list in those years at a very decided disadvantage.

There is only one way that this situation can be remedied. That is to make some provision of law by which there will be assured that not less than the average number of seven captains will be promoted each year. This will mean that, in any year when seven vacancies are not naturally created in the rear admirals' grade, sufficient rear admirals must be eliminated to create the vacancies. The question as to how to make the eliminations is a difficult one which does not come within the scope of this paper. However, it is perfectly feasible, and can be done, it is believed, in a way that would not do violence to the individuals concerned, and would result in benefit to the service as a whole.

Eliminations in some form must be adopted in the lower grades in order to prevent the coming situation where all officers of these grades excepting those who are removed from the list by reason of disability or resignation, will become lieutenant commanders, and then ruthlessly retired at a pay too low for a proper livelihood, and at ages too far advanced for good chances of other employment.

It is hardly necessary to point out the great advantage the present senior captains have over those who are following them. For illustration take the past calendar year. Not a single captain retired for age during the year, while in 1933, twenty-five captains must retire for age. In comparison with the chances for promotion of all captains lower down the list, the chances of the senior captains are extremely favorable even with the present law of age-in-grade retirement. It therefore seems that the captains who are disadvantageously placed on account of age will have to accept this handicap, especially as a change to length-of-service retirement will result in the placing of a large number of officers throughout the list in a much more disadvantageous position than they are under the present law.

Unless we revert to promotion by seniority, and unless the unlikely event occurs of an increase in the authorized number of

rear admirals, the Navy must come to look on the rank of captain as the top grade for the majority of officers, just as the Army now looks on the grade of colonel as the top rank for a large majority of the officers of that service. So long as only one per cent of the officers are rear admirals and four per cent are captains, and so long as approximately the same length of time is spent in each of the grades, only twenty-five per cent of the captains can become rear admirals, and seventy-five per cent of them must be eliminated. This condition is not remedied by simply changing the method of retirement from age-in-grade to length-of-service. In fact as this situation becomes inevitable and it becomes normal to be retired rather than to be promoted, there will be removed most of the sting which now goes with failure to be selected for promotion.

If the change from age-in-grade retirement to length-of-service retirement remedied the situation for abnormally old officers and at the same time bettered the situation for the Navy as a whole; and if it did not make conditions worse for a larger number of other individuals and even for entire classes in some cases, there could be no objection to its adoption.

But there are a number of considerations besides the effect on the officers who are older than the average of their contemporaries in their grade that should be studied before deciding whether the change is good for the service as a whole.

Take, for example, the abnormally large class of 1907. Many of its members must be eliminated at some time or another. Under age-in-grade retirement these eliminations will take place over a period of four years, and the disruption to the service as a whole will be at a minimum. Under length-of-service retirement these eliminations will take place all at once with the maximum disruption to the service. Any year that there is an abnormally large number of separations from the active list there is a curtailment in promotion. As a result if we shift from age-in-grade retirement to length-of-service retirement we find that in the year the class of 1907 retires as commanders, the class which happens to be at the top of the captains' list loses one promotion to rear admiral, and the class of 1907 itself will lose four promotions to captain, due to the decrease in the total number of commissioned officers. This inequality of chances for promotion by members of the different classes will be carried on throughout the service and year

after year with the adoption of length-of-service retirement. Large classes will always be unfairly placed while other classes, especially the abnormally small ones and those which follow immediately after these small ones, will be more or less favorably situated.

In further consideration of the effect of length-of-service retirement on the class of 1907, it must not be overlooked that this class was graduated in three separate sections and therefore another complication enters which must be provided for if the law is changed.

If we consider the present list of lieutenants and lieutenants (jg) (ignoring for the present non-graduates of the Naval Academy) to ascertain the effect on the change from age-in-grade to length-of-service retirement it is seen that more complications enter. For example: the graduates in the year 1917, of whom there are now 275 on the list, are from two classes. One of these classes graduated after four years, and one graduated after three years. The entire four year class is senior to the entire three year class. The average age of members of the four year class is one year greater than the average of the three year class. These two classes reach the top of the lieutenant commanders' list together, so it will be necessary under length-of-service retirement to eliminate an abnormally large number of them at one and the same time. It can readily be seen that members of the three year class being at the bottom of the list, will, as a class, have little chance for promotion; and, when they are forced out, they retire at an age which, on the average, will be one year younger than normal. That is, by changing from age-in-grade retirement to length-of-service retirement this entire class suffers by reason of its having graduated in three years instead of four.

We can also take as an example one of the classes which was divided into two parts, one of which was commissioned a year in advance of the other. Those who stood highest in the class were first commissioned. Under length-of-service retirement all the lower half of this class remain eligible for promotion for a year after all those of the upper half, who have not been promoted, are retired.

These examples are only a few of the intricacies that will enter with the adoption of length-of-service retirement. However, there is one more point which seems worthy of attention. This is the

fact that in the present grades of captain and commander the clear cut lines between classes has been partially obliterated by the workings of the selection law. This has resulted in a number of officers being passed over and later promoted, it then being necessary for them to be assigned dates of precedence with classes which graduated later. Under the present law those officers who have thus been passed over and later promoted will have a chance for future promotion provided they are not too old. Under the proposed change all of these officers will be retired with their respective Naval Academy classes, the members of which are considerably higher on the list, and therefore the opportunity for further promotion of any of them becomes reduced and their chance of selection practically vanishes.

Age has the great advantage over length-of-service in that it is a positive thing for each individual. There is no question when a man reaches fifty-six or forty-five or whatever age may be designated. Service is not so easily determined. In many cases resort must be had to constructive and comparative service and this always introduces complications which are impracticable of satisfactory adjustment.

With age-in-grade retirement the retirements of the members of a class are spread over a period of about four years, and are interspersed with the retirements from other classes. This avoids serious disruptions of the list. With length-of-service retirement large numbers of officers will annually go out on the same day, causing great disruption. This will inevitably produce problems of administration difficult to handle.

Non-Graduates of the Naval Academy.—The question of how best eventually to eliminate the abnormal hump made in the line of the Navy due to the non-graduates of the Naval Academy who were commissioned as an aftermath of the war, is one of importance.

There are approximately 875 of these officers. In actual naval service, commissioned and otherwise, they cover periods of from a few years to forty years. In commissioned service in the regular line they cover a period of only four years. In age they vary from sixty-three years to twenty-five years, while their Naval Academy contemporaries vary in age only from twenty-nine years to twenty-four years.

The acquiring of these non-graduates as a part of the regular line of the Navy has stimulated promotion in all of the grades

and will continue to do so until the time when the total authorized strength of 5,499 officers is reached.

This can best be illustrated by pointing out that if these officers had not been taken into the line, instead of forty-six rear admirals on the list today there would be only thirty-seven; instead of 182 captains there would be only 146; instead of 321 commanders there would be only 258, and so on through all the grades.

With the reduction of Naval Academy classes it now looks as if the full authorized strength will never be reached unless the size of the entering class is again increased or unless there is a marked decrease in the number of resignations in the lower grades. So there need be no hurry to eliminate the non-graduates, insofar as the effect on promotion and retirement is concerned.

But if these officers remain too long on the list as will be the case if that provision of the present law remains in force which exempts them from age-in-grade retirement until serving abnormally long periods in the grades of lieutenant commander, commander, and captain, they will eventually occupy to a large extent first the lieutenant commanders' list, and later the commanders' and captains' lists. This will deny promotion to practically *all* the members of several Naval Academy classes immediately following them.

So there is no doubt but that the provision of law which exempts these officers from age-in-grade retirement until after ten years in the grade of lieutenant commander should be repealed for several reasons: viz.,

(1) Many of these officers who succeed in becoming lieutenant commanders and higher will be at ages in excess of that for efficiently performing the duties of the grade.

(2) They will prevent practically all the members of a number of Naval Academy classes immediately following them from getting into the lieutenant commanders' grade, and those few who possibly do get in will be so near the retiring age that they cannot be further promoted.

(3) These officers form a special privilege class, and special privilege classes are unfair to the government, and always cause hardship to other members of the service.

The efficiency of the naval service as a whole requires that the special privileges now granted by law to the non-graduates of

the Naval Academy who were commissioned immediately after the war be repealed and that for the purpose of promotion and retirement these officers be placed on the same status as Naval Academy graduates in corresponding positions on the Navy list, whatever system of elimination be in force.

If the provision of the law which exempts these officers from age-in-grade retirement is repealed, and in its place is substituted a provision requiring them to retire for length-of-service at the same time as the Naval Academy graduates next following, the result obtained will depend largely on whether or not the length-of-service retirement requirement for lieutenant commanders remains at twenty-three years as proposed, or whether this is reduced by a number of years. In either case a number of these officers will be held in the service for a much longer time than they would be if they were subject to straight age-in-grade retirement, thereby denying promotion to younger officers more suitable for performing the duties required in the grade.

Finally, if we place these officers on a length-of-service retirement basis and put them with the Naval Academy classes next following them it can be seen that some such situation as the following will take place:

These officers are all in a four-year service block. With them in this block are the Naval Academy graduates from the classes which had greatly increased in size over those just ahead of them. We will therefore have an abnormally large number of forced retirements during these four years. These retirements, taken together with the fact that the size of the Naval Academy classes have been curtailed, will mean that during these four years there will be a great reduction in the number of promotions all along the line due to the shrinkage in the total number of officers in the Navy, and this reduction in promotion will cause an abnormal number of forced retirements during those years, making it decidedly unfair to many officers who should not be placed in such a situation.

Therefore the classes which happen to be at the top of the captains' and commanders' grades during the four years in which these length-of-service retirements are effective will practically be eliminated in toto.

On the other hand there is such wide variance in the ages of the officers in this abnormal block, it is evident that by sticking

to age-in-grade retirement their elimination will be gradual, thereby placing no whole classes in the unfortunate position of greatly reduced opportunity for promotion, and avoiding the disruptive effect on the entire line personnel that will be caused by removing all of this excess in a very limited period.

To Summarize.—1. Length-of-service retirement if substituted for age-in-grade retirement will give to a few officers abnormally old for their positions on the list additional opportunity for consideration by the Selection Boards as eligibles for promotion.

2. It will reduce the number of opportunities for consideration by the board of a larger number of the relatively younger officers.

3. In view of the approaching time when large numbers of officers will be forced to retire annually, it seems that the efficiency of the service will lead the Selection Boards to discontinue the practice of selecting only from the very top of the lists. Instead, they probably will select the most efficient from a block which at least includes all officers who are in their normal positions, and, if not promoted, would retire for age before the action of the next board takes effect.

4. By changing from age-in-grade retirement to length-of-service retirement whole classes will be adversely affected to a much greater extent than under the present law. This is because under length-of-service retirement all the members of the larger classes who are not promoted are immediately eliminated, while under age-in-grade retirement at least the younger members of these classes would have additional opportunities for selection which would keep them nearer on a par with the members of the more fortunate smaller classes.

5. By changing from age-in-grade retirement to length-of-service retirement there will be much more unevenness in the average numbers promoted and retired from the various classes than at present. This is because the ages of the members of each class cover a period of four years and overlap on both sides, thereby merging one with the other and smoothing out to a greater extent the discrepancies which would appear with length-of-service retirement.

6. The workings of the Selection Boards have resulted in a number of officers being passed over and then later promoted.

These officers now have dates of precedence different from the dates of their regular classes. With length-of-service retirement, none of these officers, whether young or old for their positions on the list, will reach near enough the tops of their respective grades to have a reasonable chance for promotion.

7. By applying length-of-service retirement to the non-graduates of the Naval Academy there will be a period of four years during which time the large number of those who came in immediately after the war, augmented by large Naval Academy classes, are being eliminated. The members of the Naval Academy classes who happen to be at the tops of the commanders' and captains' lists during this four year period will have their promotion greatly diminished if not altogether prevented.

8. Length-of-service retirement will make some of the officers in all the upper grades even older than is possible under the present law, which, when working under more normal conditions will force the ages higher than desirable. It will force the retirement of some captains when only fifty-four and fifty-five years of age. It takes away from individuals such advantage as has heretofore been considered as inherent in youth. It removes all advantages to be obtained by entering the Naval Academy at the younger ages. To some extent it even eliminates the advantages heretofore obtained by graduating high in the class.

The conclusions reached therefore are: (1) That the basic laws under which promotions and retirements are now being made are good, and the only changes necessary or desirable are adjustments similar to those recommended as a result of the exhaustive study previously made, and which are enumerated at the beginning of this paper.

(2) Length-of-service retirement will introduce a number of complications that will be difficult of adjustment and which eventually will cause to a larger number of officers more unfairness and dissatisfaction than is at present caused, or in the future will be caused, by the provisions of age-in-grade retirement.

(3) That a change from age-in-grade retirement to length-of-service retirement will in no way benefit the service as a whole, but on the other hand will have the opposite effect.

THE LINE PERSONNEL SITUATION AT THE PRESENT TIME

By Captain R. C. Smith, U. S. Navy, Ret.

HAVING been on duty in connection with personnel measures during the past winter, I am presenting herewith a summary of the situation as it now exists.

Two questions had already been under consideration. What measures, if any, were needed to ameliorate the situation occasioned by the "new hump"; that is, the officers taken into the line in 1920 and 1921 from ex-warrant officers and ex-reserve and temporary officers? And what measures could be taken with regard to the older officers in their classes who were beginning to retire from age prior to reaching a position on the list reasonably entitling them to consideration by the Selection Board?

At the same time a bill was introduced in Congress by Mr. Britten, of the Naval Committee (H. R. 10355, December 5, 1924) amending the existing personnel law (Act of August 29, 1916). This bill was referred to the Department and was the occasion of a rather full investigation. It was not approved by the Department, except in a few particulars. At the same time, the result of the study showed that the bill could be modified in some of its details, while preserving its general outlines, and that it would then be workable and include a number of desirable features.

Some of the considerations affecting the question of the "new hump" are the following: These officers occupy positions on the list between the classes that graduated from 1917 to 1920 inclusive. By the *Navy Register* of 1924 there were about 900 of them in all, of whom about 350 were ex-warrant and ex-commissioned warrant officers. These latter, with long previous service, are much older then their Naval Academy contemporaries, and are already beginning to retire for age. The ex-reserve and temporary officers vary from about the same age as the Naval Academy graduates to ten or fifteen years older. The average would be about five to seven years older.

Under present law these officers are promoted by seniority to the grade of lieutenant commander, thereafter by selection. They are by law immune from age-in-grade retirement until they have served ten years, six years, and eight years, respectively, in the grades of lieutenant commander, commander, and captain. The operation of this requirement will retain these officers for a long period as lieutenant commander, if not selected for promotion, and will largely diminish the number of Naval Academy graduates in the grade who will be qualified for selection by four years' service in the grade. This situation has caused some uneasiness to the graduates below the "new hump."

One suggestion has been to repeal the provision of law establishing such periods of service for these officers; but this cannot very well be done without replacing it with something more equitable to all concerned. In the Britten bill, which is based on length of service, it is easy; for the service of the non-graduates is assimilated with the service of the graduates who are their contemporaries on the list. However, if age-in-grade retirement is retained, a feasible course would be to equalize the period of exemption in the three grades by amending existing law to change ten, six and eight to seven, seven, seven; that is, an immunity period of seven years in each of the three grades. This has been recommended by the Department.

It has also been suggested to make all of these officers extra numbers, but it must be borne in mind that there are certain advantages in retaining them on the list as regular numbers as long as they do not interfere unduly with the promotion of graduates now below them. With 900 additional officers, it means nine more rear admirals, thirty-six more captains, sixty-three more commanders, one hundred twenty-six more lieutenant commanders, and six hundred sixty-six more of other grades. Until the Navy reaches its full authorized strength of 5,499, these additional 900 will thus make it possible to keep up materially the strength of all the grades.

A compromise would be to make them extra numbers on reaching the specified age for retirement in any grade, and to retain them thereafter on the active list until they reach the period of ten years', or six years', or eight years' service, according to the grade, and as required by existing law. This would make no change

whatever in the prospects of the non-graduates, but would remove them gradually and in time entirely from the path of the graduates. The reduction in the total strength of the line would also be gradual, and would be easily absorbed by the annual graduates of the Naval Academy. It is assumed that enough appointments will be made to the Naval Academy gradually to bring up the line to its authorized strength. This plan would seem to be the simplest, and the most equitable one, for overcoming the apparent difficulties of the "new hump."

As already stated, the ex-warrant officers are already beginning to retire on reaching the age of sixty-four years, and some of them for thirty years' service. The number of such retirements will increase with length of time. Also without wishing any of these non-graduates hard luck, they will find it difficult in most cases to pass the professional examinations for promotion; and after reaching the grade of lieutenant commander they will be competing with graduates for selection. A survey of the situation ten or fifteen years hence under existing law, and taking into account all the influences that have been mentioned as tending to smooth out this so called hump, indicates the probability that it will be gradually cleared up without undue delay in promotion to the Naval Academy classes immediately following it. For the rest the situation is not yet acute. The first of the hump will not reach the lieutenant commander's grade for five or six years, and they will not all be in that grade, where they would hold up the promotion of graduates, for a number of years after that. There is thus time for ameliorative legislation in connection with the "new hump" of non-graduates; but the question should be carefully considered, and any legislation that may be necessary should be enacted while there is yet time.

The other question that was referred to at the outset resolves itself into whether retirement in grades below rear admiral should be for age or length of service. As a matter of fact neither is a sufficient reason for retirement in any of these grades. All the officers in any of the classes are still capable of performing all the duties of the grade. Both age and length of service imply experience, and experience, other things being equal, results in efficiency. The real reason for retirement is that there is a surplus of officers with necessary qualifications for the higher

grades. Hence advancement should come first, for as many as are needed, and for those not advanced, some other disposition should be made.

The question, therefore, would seem to be, when should officers be advanced in rank? Should it be age or length of service? This is not considering relative merit, which is still another question. Having decided when the advancement should be made, some go up at such time and the rest go out. The method of determining those to go up or to go out is apart from the present question. It will naturally be some method of selection.

Hence, the real question resolves itself apparently into whether age or length of service should be the criterion for promotion. Put in this way, it would seem that age could not be the criterion, unless all officers entered the service at the same age, and if age could not be the criterion, there is left only length of service.

The average officer has about forty-two years to serve after graduation, if he passes through all the grades. If he serves about seven years in each grade (lumping ensign and junior lieutenant in the first period) it will take him through all the grades in forty-two years. Other periods have been advocated, but this plan seems as reasonable as any, if not more reasonable than any, both for efficiency and for administrative purposes. Hence, if we make promotions at the end of seven-year periods (at the latest) and separate in some way those wanted from those not wanted, the question of age in grade or length of service for retirement disappears entirely. But if we continue to discuss the proper time for retirement in those grades which, as shown above, is aside from the real question, the main arguments that have been advanced seem to be as follows:

Under Age-in-Grade Retirement.—(a) The younger officers in classes feel that they acquired a certain advantage when they entered young, and that they should continue to retain this advantage.

(b) Retirement for age fixes a definite date which is always known and cannot be changed unless the retirement age itself is changed.

(c) In large classes the retirement is spread over several years instead of occurring all at once, which has a double advantage. It eases the strain on administrative details, and it smooths and

merges the large classes with those on either side, making greater regularity in the annual retirements.

(d) Owing to changes in the length of the academic course, there have been years with more than one class graduating the same year. This would make a large number of retirements at the same time under length-of-service retirement.

(e) If officers are passed over in a lower grade, some of them under age-in-grade retirement may still get their promotion eventually. If the change is made to a length-of-service requirement, then all of them are apt to go out before they reach a point at which they might be considered for further promotion.

(f) Change from age-in-grade to length-of-service retirement does not improve promotion on the whole; there will be the same average percentage to go out in each grade under either system.

(g) Change to length of service will benefit temporarily a few officers who are old for their classes, but at the expense of others who are younger.

(h) It is not necessary to change to length-of-service to give even the older officers a chance to be considered by the Selection Board. This may be done by changing the percentages in the grades and by spacing the service in the grades more evenly.

Under Length-of-Service Retirement.—This question has arisen owing to the wide variation in age in the same Naval Academy classes. There was possibly a reason originally for this variation. The course at the Academy was four years, and each congressman had only one appointment. Hence normally, not considering failures, there would be an oppointment every four years. To avoid disqualifying any of the boys in the district, the limit of age would have to be the same; that is, four years. This reason seems to have been lost sight of since the number of appointments has been materially increased. There is no reason now why the age limits should not be reduced at once to two years, say seventeen to nineteen. If this were done there would not be any very great difference between retirement for age, or for length of service.

But to go back to the existing navy list. An assumption has been made that a variation of as much as four years is permissible in the same class, presumably without impairment of efficiency. This holds at the Naval Academy, and through the grades of ensign, lieutenant (j.g.) and lieutenant, where promotion is by

seniority. In the grade of lieutenant commander, the assumption is changed, and the older members of classes must now be assumed to be less efficient on the whole, and must retire earlier than the younger members. That is, the original assumption is at this point discarded.

Of course, others things being equal, the normal assumption is that experience goes with service, and more experience means more efficiency. Length of service then, not age, would be the normal criterion for promotion, those who are in excess and not promoted after a stated length of service to be retired.

Taking up the sub-paragraphs under age-in-grade retirement:

(a) The young officers in classes did certainly acquire this advantage. Under seniority promotion they reached each grade younger, and served longer as flag officers. This result was inherent to the system and was accepted as such. It was not in itself to the disadvantage of any older officer in the same class, who went up in regular order, in accordance with his standing in the class. But under the system of promotion by selection and age-in-grade retirement, this advantage was much accentuated and was gained to the corresponding disadvantages of the older officers. The real criterion is efficiency. Efficiency, as has been seen, other things being equal, goes with experience, and experience goes with length of service. This points to promotion for length of service and retirement for those not promoted. It may be remarked that the younger officers, even with the change to a length-of-service requirement, still have the advantage of longer service as flag officers.

(b) This is a valid advantage to age-in-grade retirement. However, in length-of-service retirement the difficulties may be overcome by assuming that each class graduated four years after the date of entry. This puts all classes on an equal footing, whatever the date of actual graduation. Once this date is fixed it is permanent and does not vary.

(c) This is valid, but it is an advantage that is gained entirely at the expense of the older officers in each class and to the benefit of the younger officers, as it gives them more opportunities for consideration by the Selection Board. As for administrative objections in retiring all of a class at once, this is not serious. Those retired are the ones not promoted. They are in excess of the

actual needs. They are retired because there is no place for them. As for reduction in total strength, it occurs at the same time the new class of ensigns is commissioned, which at once fills up these and other vacancies.

(d) As has been explained, classes in the past have graduated in from three to six years, and sometimes there have been two classes to graduate in the same year. But only one class has entered each year, and by considering that all classes have graduated four years later than the date of entry, this difficulty is overcome. This is provided for in the bills based on length of service.

(e) It is of course true that if an officer is passed over by the Selection Board he loses his relative place on the list. This is true for either method of retirement. In age-in-grade retirement the younger men may get another chance, but it is at the expense of the older men; another case where the older men in the class are put at a disadvantage through no fault of their own. The average is of course the same in either method.

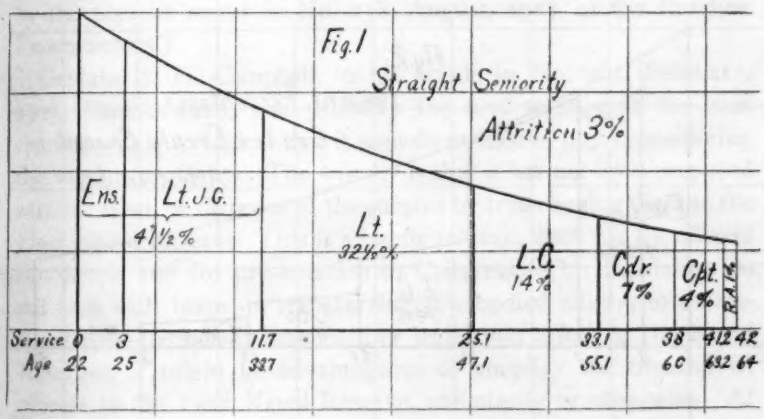
(f) This is true, but no claim is made that change to length-of-service retirement will improve promotion. This can only be accomplished by better spacing and change in the percentages in the grades. Even if this were done, say with an even spacing of seven years in all the grades (ensigns and junior lieutenants seven years combined), then under age-in-grade retirement, in the grades from which selections are made, with four years required for qualification, officers would have on the average three chances for consideration by the Selection Board. But as the age varies in the classes by four years, the men of average age would have three chances, the youngest men five chances, the oldest men one chance. Under length-of-service retirement all would have three chances. The object of any change from age-in-grade retirement to length-of-service retirement is to place the young and old men in the same class on an equality, which is what was done when they entered the Naval Academy, that is to give them all an equal opportunity.

(g) This could be put differently. The effect will be to restore to the older men in the classes the equal oportunity, which they originally had and which they do not now enjoy.

(h) This has already been answered in paragraph (f) above. Proper spacing would give all officers at least one chance, but to

do this the younger officers would have five chances, thus retaining their present advantages.

The general principles applicable to promotion may now be taken up. Figure 1 shows the problem in its simplest form. This is a diagram in which the successive graduating classes are plotted as ordinates at intervals of a year. Each class suffers a certain annual attrition, as it has come to be called. This means the annual percentage loss from all causes except age retirement (final, or age-in-grade). It includes deaths, resignations, dismissals, and disability or voluntary retirements. It used to be about three per cent annually in all parts of the list prior to the



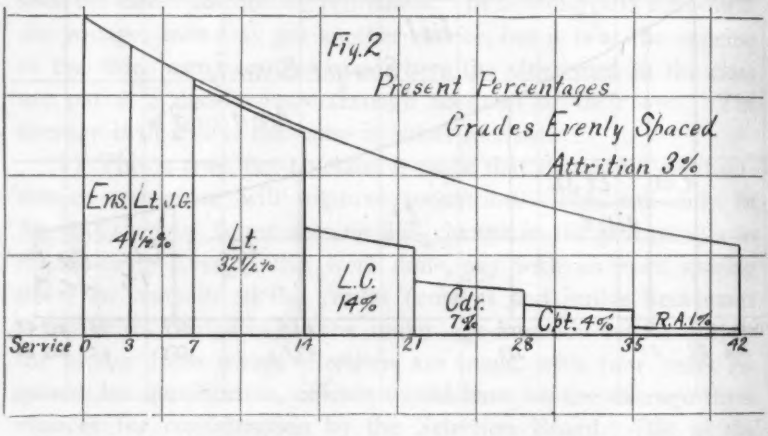
World War. There were more resignations early, more deaths and disability and voluntary retirements later, making the percentage in the successive classes practically uniform.

Since the World War it has run up to a total of about five per cent due largely to early resignations. This indicates some unrest or uneasiness among the younger officers, which will probably grow less with time, and especially if the promotion laws are so modified as to afford an equal opportunity to all, really the American principle in all walks of life. The diagram, therefore, goes back to the old normal attrition of three per cent; that is, each class loses three per cent of itself each year. This results in the upper limiting curve of the diagram. (Methods of solving all the problems arising from these assumptions are given in an article

by the writer in No. 260, October, 1924, of the Institute PROCEEDINGS.)

If promotion is by seniority alone, and the percentage in the grades are as in existing law, then areas may be marked off to correspond; that is, each area equal to the sum of the ordinates at unit intervals. The result shows the ages at which promotion could be expected, assuming twenty-two as the age at graduation; 33.7 to lieutenant, 47.1 to lieutenant commander, 55.1 to commander, 60 to captain, 63.2 to rear admiral, and retirement at sixty-four, clearly an impossible situation.

So something must be done to get officers into the higher grades in time to familiarize themselves with the duties of those grades,



and to acquire the experience in each lower grade needed to fit them for the duties of the next higher grade. The total service is about forty-two years (twenty-two to sixty-four). It is beginning to be recognized that the most logical spacing, both for administrative purposes and for training and acquiring the experience for the next higher grade, will be equal periods in all the grades. Ensigns serve by law three years, but for spacing they may be grouped with lieutenants, junior grade. As there are five other grades, this makes six spaces, or seven years in each.

Fig. 2 shows what would happen with such spacing, and with percentages as in existing law. Of course the total is no longer the same as in Fig. 1. Either the entries must be cut down for Fig. 1, or increased for Fig. 2, to preserve the same total. The

area between the attrition curve and the irregular line marking the upper limit of the different grades, as shown in Fig. 2, represents the surplus of officers of ages suitable for the duties of the higher grades. This surplus will have been disposed of in some way, in successive steps. The relative difference between the number reaching the top of each grade and the number required for entering the next higher grade shows the number that has been eliminated at that point.

How to eliminate this surplus, and what to do with them, are and have been the main subject of discussion in all proposed plans. These questions will not be taken up here, except incidentally. (The method of elimination was discussed rather fully by the present writer in No. 258, August, 1924, of the Institute PROCEEDINGS.)

Captain E. H. Campbell, in his article in No. 264, February, 1925, PROCEEDINGS, was probably the first to suggest the even spacing. It is so logical that it appeals at once to those considering the various problems. The wonder is that it has not been proposed earlier. Also, he disposes of the surplus by transferring them to the Fleet Naval Reserve. This is a happy solution, both for the officers concerned, and for presentation to Congress. Our legislators do not look with favor on transferring able bodied officers to the retired list. In fact, in any further legislation affecting the Naval Reserves, it might be advantageous to simplify the transfer of officers to the Fleet Naval Reserve, voluntarily or otherwise. At present, to enroll in the Reserve, they must first resign from the Navy.

Fig. 3 is the actual navy list compared with the normal working of the present law. The percentages are as in Figs. 1 and 2, but the spacing is different. The irregular line shows the strength of the various classes (from the *Navy Register* of 1924) and down to the class of 1924, totaling about 4,842. The class notation here used is four years later than the date of entry. The reason for this is that the Naval Academy course has varied by law in the past between six and three years. Hence, by taking a date four years later than the date of entry, it puts them all on the same footing. The broken line shows the total of the non-graduates.

The diagram showing the normal working of the present law supposes equal entries each year, an attrition of three per cent (the old normal rate), and a total equal to the total of the present list. Since the two areas are equal, it follows that the part of the actual list above the normal attrition line, plus the non-graduates, will be just sufficient to fill up the shortage in the middle and upper part of the list. Promotion from the grade of ensign is by length of service (three years), thereafter by seniority to the grade of lieutenant commander, and thereafter by selection and age-in-grade retirement for those not selected. The spacing is the direct result of seniority first, and thereafter of the ages for age-in-grade retirement. The amount of drop in the successive steps of the

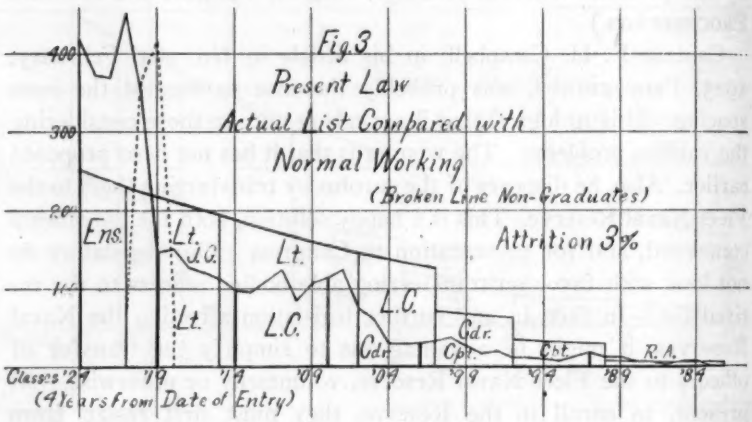
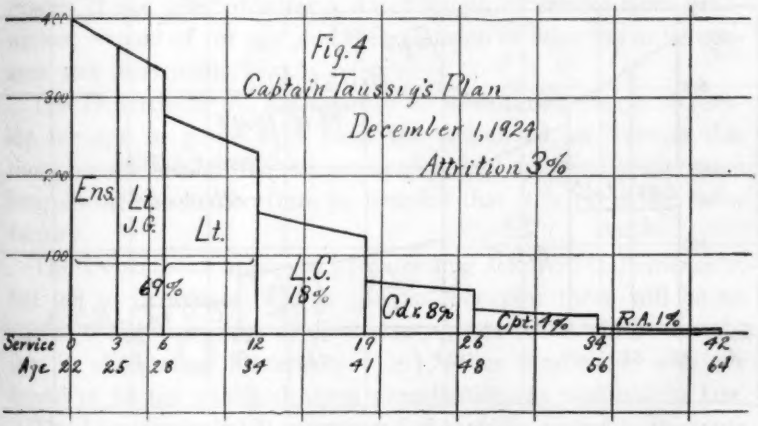


diagram shows the average number of age-in-grade retirements to be expected from each grade annually in a total list equal to that shown, about 4,842. (The full authorized strength is 5,499. The spacing would not be changed, but the ordinates would be proportionately increased. For method of calculating, see No. 260 of the PROCEEDINGS.)

Promotion at present is much in advance of that that will be reached later, this owing to the relatively small size of the classes from 1890 to 1917 inclusive. The result in the time of reaching the grades from lieutenant to captain is as follows:

Lieutenant	Now 6 years	When normal 9 years
Lieutenant Commander	Now 10 years	When normal 18 years
Commander	Now 16 years	When normal 23 years
Captain	Now 22 years	When normal 28 years

The rate of promotion when normal will be thus much too slow. Another very great disadvantage is that with only five years' service in the grades of lieutenant commander and commander, and a qualification service of four years for selection, there will be left only one year on the average for each class to be available for selection. This means that, with a variation of four years in age in each class, the average men will have one year, the youngest will have three years, while the oldest will be retired for age when only three years in the grade, and lacking one year of the four years' service for qualification. This is a serious situation for the older men, who do not thus have the equal opportunity to which they might be considered entitled. This applies less to com-

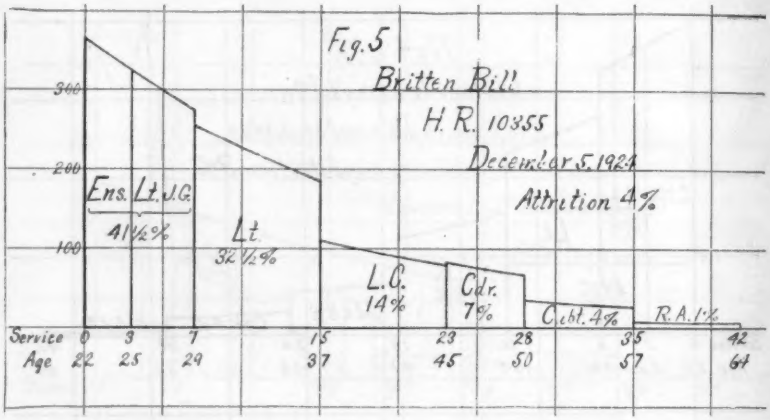


manders than to lieutenant commanders, for most of the older men in the classes will have been already eliminated in the lower grade at the age of forty-five.

Of the plans submitted about this time is one by Captain Taussig, December 1, 1924, shown in Fig. 4. This is practically the same as his plan in No. 254, April, 1924, PROCEEDINGS. It is based on present law, but modifies slightly the percentages and the ages for retirement in the different grades. It gives a better spacing and also meets the need for more commanders and more lieutenant commanders. The excess in the grades of lieutenant and below shown by the drop in these grades, is removed by selection out. These officers are not retired, but are honorably discharged with a lump sum gratuity, varying with the rank. The spacing in the

grades of lieutenant commander, commander and captain insures that each officer shall have one or more chances to be considered by the Selection Board, a very desirable modification. The plan is a considerable improvement on the present law and is interesting as showing the drift of service opinion as to the necessity of a change.

The Britten Bill as introduced, H. R. 10355, of December 5, 1924, is shown in Fig. 5. The attrition is taken as four per cent, which is a mean between the actual present percentage and the old normal percentage. The amount of attrition allowed in the calculation may vary somewhat without affecting the spacing. If there is more attrition, there will be less forced retirement, and vice versa.



This bill is based on promotion by selection prior to a stated length of service for each grade, counting from date of graduation, and retirement of those not so selected. The percentages in the grades are as in the present law. Selection is extended down two grades. Lieutenants and lieutenants (j.g.) not selected are not retired, but instead, are given a lump sum gratuity varying with length of service.

The advantage of these diagrams is that they reveal the main features at a glance. First, we notice that the forced retirements (shown by the drop in each grade) are quite uneven. From lieutenant commander to commander there is, in fact, no drop, but a slight rise. Each grade ought to be a reservoir for the grade above. Theoretically, the reduction should be uniform throughout

all the grades. This avoids taxing any of them unduly, and retains their reserve strength unimpaired, and available in case of emergency.

Next we notice that the spacing, while a great improvement on the normal existing law, Fig. 3, still has the defect of only five years in the grade of commander, allowing only one year of availability for consideration by the Selection Board. The two grades below, however, have a spacing of eight years each, which is longer than necessary. By taking away a year from each of these, and giving it to the commander's grade, there would result the ideal spacing of seven years throughout the whole list.

The new features of the bill are thus retirement in certain grades, if not selected, after a stated length of service since graduation, instead of for age, and the extension of selection to lieutenants and lieutenants (j.g.).

The Department did not approve of substituting length of service for age in grade as a basis for retirement, at least at this time, for the reason that the present law had not been in operation long enough to demonstrate in practice that it is or is not satisfactory.

The Department approved of extending selection to lieutenants, but not to lieutenants (j.g.). In another year there will be no excess below the grade of lieutenant, hence there will be no object in eliminating lieutenants (j.g.), other than those who are found to be not qualified, upon examination, as required by law.

The Department's bill recommended that the forced retirements in any grade should not exceed ten per cent of the grade in any one year, the excess, if any, of those who would be otherwise retired, to be retained for consideration by the next following Selection Board.

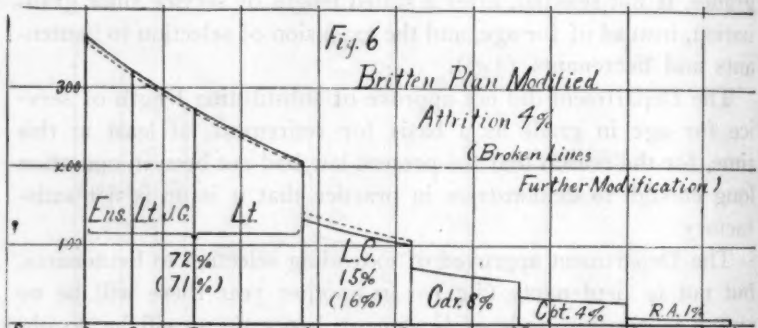
Sec. 2 changed the date of expiration of four years' service in the grade necessary for consideration by the Selection Board from November 30 to July 1, as more in keeping with the present practice of convening the Selection Board in June.

Sec. 3 changed the proviso of the Act of June 4, 1920, in regard to age-in-grade retirements of officers appointed from sources other than the Naval Academy, exempting them from such retirement until they should have served ten years as a lieutenant commander, six years as a commander, or eight years as a captain,

to a uniform requirement of seven years in each of these three grades. Ex-warrant officers not promoted were to have the option of reverting to their warrant status.

Sec. 4 made lieutenants ineligible for promotion after fourteen years of service since graduation, and non-graduates counted their service with the graduate next below them on the list. Lieutenants not selected for promotion were wholly retired with two years' pay. Service since graduation was to count from July 1 of the year the class would have graduated if it had completed a four years' course.

All of the above sections were features of the modified Britten plan, Fig. 6, now to be described. The Britten Bill, Fig. 5, was



referred by the Department to the Bureau of Navigation and the General Board for comment and recommendation. The Bureau of Navigation recommended a number of changes in the details of the plan to improve its working, without change in the principles on which the bill was based. The General Board commented on the proposed changes, but did not recommend the passage of the bill, for the same reason set forth in the Department's action, that the existing law had not been in operation long enough to decide whether or not it were satisfactory. The recommendations and comments resulted in the modified Britten plan.

As will be seen from Fig. 6, there is in the modified plan an even spacing of seven years in all the grades (ensigns and lieutenants (j.g.), grouped in the first period). Also the drop (forced

retirements) in the different grades is reasonably uniform; that is, about the same proportion of the class at the top of each grade. The drop from captain to rear admiral is necessarily more, for there are four captains to one rear admiral.

In order to secure this uniform drop, the commanders have been increased one per cent and the lieutenant commanders one per cent, reducing the three lower grades combined by a corresponding amount. A still better percentage distribution would be that shown by the broken line and the figures in parentheses, a further increase of one per cent in the lieutenant commanders, and a further decrease of one per cent in the three lower grades.

The percentages in the different plans are compared in the following tabulation.

	Present Law Percentage	*Taussig Plan* Percentage	*Modified Britten* Percentage
Rear Admiral	1	1	1
Captain	4	4	4
Commander	7	8	8
Lieutenant Commander	14	18	15 (16)
Rest	74	69	72 (71)

The parenthesis figures are preferred, and are about a mean of the other two plans. As to the increase in the grades of commander and lieutenant commander, they are very slight, relatively; and by the testimony of all the competent authorities, they are needed, or more than needed, for the actual duties of these grades.

As the Britten plan is based on promotion prior to a certain length of service for each grade, and retirement of those not selected, it is easy to arrange for the non-graduates, who count their service with the graduate next below them. As in some years there would be a large number of retirements, both of graduates and non-graduates, it has been thought desirable to spread these retirements over several years by a proviso in the modified plan like the one in the Navy Department bill, limiting such retirements to ten per cent of the grade in any one year. All of the special features in that bill, as previously enumerated, are also incorporated in the modified Britten plan.

The modified plan has also an additional feature, which it is believed will be of much benefit. In the lower grades, before selection is reached, there are always a few who are not up to the

mark, and who manage in one way or another to get past the examining board when they come up for lieutenant (j.g.), and lieutenant. The board now has no option except to pass them or to drop them with not more than one year's pay. This does well enough, perhaps, for ensigns, but for lieutenants (j.g.), the modified plan gives them eighteen months' pay, and for lieutenants and lieutenant commanders two years' pay. In all of these grades they are not dropped hereafter, but are wholly retired. This increases materially the alternatives available to the examining board, and will no doubt help to dispose of cases of the above nature, who would otherwise be left to drift along into the higher grades. The Department's bill, Sec. 4, provides similarly for lieutenants not selected for promotion, who are wholly retired with two years' pay.

The modified Britten plan, as above described, and as shown in Fig. 6 (in which the broken line contour is preferred), is probably as satisfactory as any plan that can be devised based on the principles of the present law. There remains a single feature of unequal opportunity that cannot be entirely corrected under those principles. The present Naval Academy classes are quite uneven in size (See Fig. 3). As those classes arrive at the head of the various grades they must be promoted or retired. The vacancies above them tend to become more and more uniform, especially in the higher grades. Thus the proportion of retirements in the different classes will vary very materially. Result, unequal opportunity. This is softened considerably in the modified Britten plan by providing three full classes at the top of each grade from which selections may be made, allowing them to be made proportionately to the size of the classes if so desired, and by the ten per cent proviso, which spreads unusually large retirements over several years. This is much better than the present law, but it does not remove entirely the defect of unequal opportunity.

There is a possible solution. When a large class reaches the top of any grade, and the promotion of all of them would cause an excess in the grade above; then, instead of reducing such excess by retirements from this one class alone, reduce it by retirements from the whole grade above. This is not possible except by combining some form of selection out, with the present selection up. The simplest form of selection out is by reverse effect; as for in-

stance, after selection up, continue the selection in each grade to constitute an eligibility list for future selection and to include as many as are allowed to fill up the grade, all not on the eligible list to retire. Thus retirements could be made throughout the whole grade, instead of entirely from the class at the top of the grade below. This would remove the last remaining vestige of unequal opportunity, as nearly as it can be accomplished by provisions of law, and would result in a promotion plan that would be as equitable as could be made. There might be further changes, but they would be in the details, such as percentages, length of service in the grades, proportion of selection up to selection out (elimination by non-inclusion in the eligibility list). There would be no necessity for further change in the principles. Not all officers can expect to be promoted to the higher grades, but they can reasonably expect that in the selections for such promotions they will enjoy an equal opportunity with their contemporaries in the same part of the list.

OTHER DAYS IN KIANG-SU

By Captain Lyman A. Cotten, U. S. Navy

DOUBTLESS, the normally peaceful peasantry of Kiang-su think that evil days have fallen on their fair province, and well may they think so. The armies of China in revolt march and countermarch around them and spread terror amongst them, leaving a broad trail of bloodshed, fire and pillage to augment accumulated troubles already heavy enough to crush the spirit of the most hardy. Rebellion, treachery, plots, bribery and corruption arise like a pestilential mist in the Yangtze Valley until the spirit of man knows not where to turn for rest or refuge, and regret for the things that were is only exceeded by the fear of the things that may come.

Can this be the same Kiang-su of other days? That Kiang-su was a prosperous, smiling country, but above all peaceful—peaceful with the peacefulness of quiet and simplicity and life unstirred by the throb of our rushing, twentieth-century civilization. That was the country I saw but a few years ago when China was an empire, and a jolly party of us who loved to be far from the crowded cities, cruised in a Chinese house boat to the Ta-hu Lakes for hunting and recreation—and that is the country I like to think of as Kiang-su.

However rich potentially China may be, the lives of individual Chinese are dependent upon ceaseless labor and the most diversified industries. No chance, however small, of wresting a living from the lap of Mother Earth is allowed to escape. Some of their industries are quaint survivals of bygone centuries that have lived on almost without change, while their counterparts in other lands have either languished and died, or else have so changed through constant striving for improvement that their very relationship has been obliterated.

On this cruise to the Ta-hu Lakes in Kiang-su I came without premeditation upon a strange combination of human nature and

cormorant nature that gives rise to an interesting and unusual industry that can be but little known to foreigners, though doubtless it has existed for many generations. Think of many adult human beings making their living from the labor of trained birds, and this too in our modern machinery-using age.

Let us start from the beginning where we alighted in the heart of Kiang-su Province and stood watching our train speed farther on towards the interior of China. We found ourselves the only foreigners in sight surrounded by a surging crowd of jabbering, gesticulating Chinese, that suggested the mob scene from some lurid melodrama. They were not indicating unfriendliness toward the "barbarians" left in their midst, as one might easily have supposed, but were only struggling with much strenuosity for the opportunity of earning a few cents by assisting our servants in transporting baggage from train to house boat.

These details having been settled without actually bringing on a riot, we took the trail for the Grand Canal, about a mile away, where we trusted we would find our house boat, sent on several days in advance. This we did and, unceremoniously dumping our baggage aboard, we waved a farewell to the curious crowd that watched us from the bank and were off on our cruise to the Ta-hu Lakes.

From the point at which we embarked the canal ran over toward the ancient walled city of Wu-si, and then skirted the walls for a few miles. Here we fairly had to creep along, for the canal was crowded with cargo junks, passenger sampans and the large and richly furnished house boats of the wealthy Chinese. Under humpbacked stone bridges hundreds of years old, past water gates where small canals led through the walls into the city, and frequently stormed at in fluent Chinese by irate watermen, we slowly forced our way along. Just as night came on, having reached the point where the main canal turned sharply away from the city walls, we tied up to the bank and sought our bunks in early slumber that even the discordant noises of the near-by Chinese city could not disturb.

Daylight next morning found us stirring, and we cast off our lines as the sun was rising in a blaze of wintry glory over the awakening multitude in the city behind us, and the crispness of the morning air made one feel like shouting for the mere joy of

living. Heading away for Little Ta-hu Lake, we soon lost the noises of the city and began to realize that we were, indeed, "strangers in a foreign land," beyond the sphere of western civilization.

Even in mid-winter the rural Chinaman has outdoor work to keep him busy. With rakes and improvised dredges the black mud and water-grass were being taken from the bottoms of canals and ditches to enrich the garden-like Chinese farms, while from far and near came the unmusical chanteys of the oarsmen in all manner of misshapen sampans (small boats) that glided by without ceasing. Everywhere haste was the order of the day, from the querulous old women that busied themselves about their mud cabins to the "fly-fly" ducks that passed swiftly overhead, as though fearing to reach the lake too late for breakfast. We alone drifted lazily along and enjoyed the novelty of the scene where the yellow men had not yet felt the oncoming tide of the civilization of their whiter-faced brothers. Down to the very banks of the canal the fields were marked out for cultivation. Dykes and ditches controlled the water, and where nature had placed a pond, the Chinese had walled it about with mud, confining it to its smallest possible limits and wresting from its shallow waters part of the life-sustaining land beneath. A few miles away massive hills reared their somber heads denuded of trees, barren and eroded. In the clear morning light they stood forth as colossal monuments to the stupidity of former generations that had failed to preserve the forests of the hills to be the guardian reservoirs of the fertile plains below, even as we are doing in some parts of our own country today.

Soon after getting underway a sampan passed us that at once attracted our attention. Sculled by two robust Chinamen, it seemed fairly to leap along the canal in eagerness to be out upon the broader waters of the lake. However, it was not its speed that attracted us, but the strange passengers it carried. Projecting from either side of the boat were six or seven short, flat outriggers upon each of which sat a pair of large, dark-colored birds nearly two feet in height. Slim and slick and trained for speed they sat upon their perches swaying gently to and fro to the motion of the boat as it was sculled along and each feature of their feathery

bodies seemed designed for speed—particularly for sub-surface speed.

While we looked with interest at this sampan another appeared, and another and still others. Calling our interpreter we inquired the meaning of such cargoes. As all Chinese expect foreign barbarians to display ignorance and ask fool questions, the interpreter showed no surprise, but "with the smile that was childlike and bland" informed us that these were merely cormorant fishers! I wonder if other foreign barbarians are as ignorant as I was? I vaguely remembered having heard that the Chinese trained cormorants to fish for them, and in a subconscious way I had placed it along with falconry in early England—a sport that had perhaps passed away. But here were hundreds and hundreds of birds making a living for numbers of horny-handed Chinamen whose ideas of sport were absolutely *nil*. In some parts of the world cormorant fishing may be a sport for all I know, but here it was surely an industry. We were all anxious to see such an industry in active operation, so the interpreter, calling several of the cormorant boats alongside, appointed a rendezvous for the following morning at our prospective anchorage.

About noon we came to anchor at the chosen spot, under the shadow of a bold and rocky point, with the inevitable joss house (temple) perched upon its summit. We paid our respects to the toothless old priest in charge, and from his appearance and the general dilapidation of his surroundings, his position could have been no sinecure. The joss house contained perhaps a dozen or more hideous wooden images, besmeared with paint and sadly in need of repair. At one end of the principal room, for the reception of offerings, was a large box half filled with imitation gold and silver money made of paper. Your Chinaman parts with his real money with reluctance, to say the least, and credits his joss with a very low order of intelligence in being so easily deceived. However, we "foreign devils" did not get off so easily, as our attention was pointedly called to the half filled box. A few real coins brought forth many "k'ow t'ows" from the high priest, and mutterings of thanks and blessings, supposedly, though for aught we knew he may have been calling down curses upon our barbarian heads for not giving more.

THE SECLUDED HOME OF THE HIGH PRIEST

As it was still early in the afternoon, we decided to try out at once the shooting possibilities of the surrounding country. Bidding adieu to our new friend the priest, guns and ammunition were broken out, and we were soon off for a cross-country tramp with direful intentions upon any manner of game that crossed our path.

One had not far to look for game in China then where the possession of a shotgun by a native was of very rare occurrence, and we had gone but a short distance from our point of landing when we found that game was abundant and in great variety. There was a startling whirr, a hurried bang, a more careful second, and there lying upon the ground was our first gorgeous-colored cock pheasant. Modern firearms against the pheasants of ancient China seemed hardly fair, but many others had better luck and sailed majestically away despite the ineffective bangs from our several guns.

We were not looking for any particular kind of game but for any kind so long as it kept us out of doors and possessed reasonable powers of escape, to make the sport worthy of the effort. Each hunter followed his own inclination. One scouted along the marshy ground near the lake for snipe, and the ratio between snipe killed and shots fired was, I fear, a fraction of small proportions, for this is no tale of mighty hunters but of other days in Kiang-su, before internecine warfare had become the national sport of China. Another hunter breasted the mulberry fields to try conclusions with the elusive woodcock, and the most rabid game protectionist could find but little to complain of in the result; a third declared pheasant shooting along the foothills as his choice, but it must be confessed that he did not qualify as a successful "pot-hunter." Before making my choice I climbed a small hill to survey the surrounding country. Extending back from the lake I saw a beautiful, broad, well-cultivated valley interspersed with numerous small ponds, and I elected to try these for ducks. Many of these ponds were not more than fifteen or twenty yards in width, while others were larger, and all were held within retaining walls of mud several feet high. Frequently, the fact that there was a pond could not be detected until one stood almost alongside it, and the mud walls effectively concealed any ducks that might be feeding within. Out of almost every pond from one to a dozen ducks would rise

with a suddenness that made quick and accurate shooting essential for success. Sometimes I had luck, but more often luck was on the side of the ducks. The size of my afternoon's bag, I feel sure, would not lay me open to the charge of being a "game hog," but for comfortable, sporty, exciting shooting, the valleys around the Ta-hu Lakes on a bright winter's day were surely such as to delight the heart of the most jaded sportsman, which I was not.

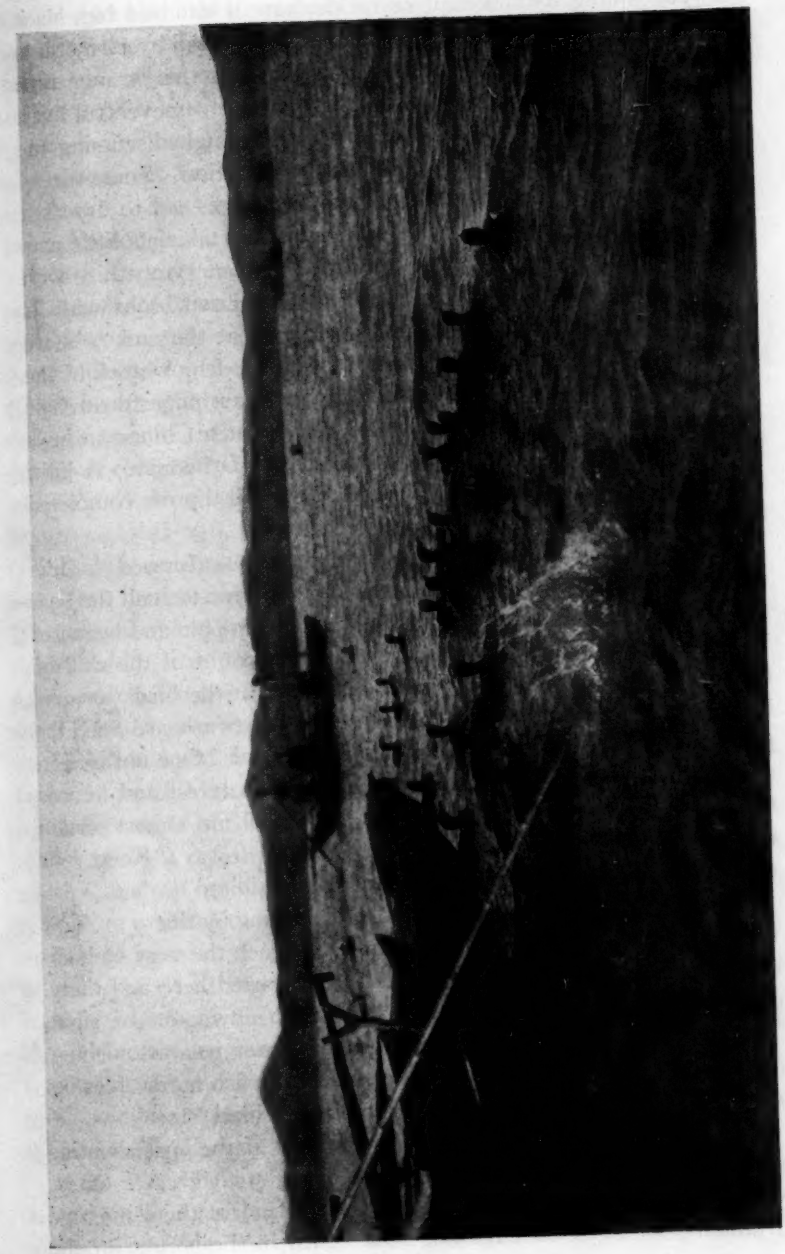
As we reassembled at our house boat, late in the afternoon, tired but happy, we could but acknowledge that while our combined kill might not be much more than sufficient to satisfy the appetites of ourselves and servants, still each was fully aware that his appetite was abnormal.

At the appointed hour next morning five cormorant boats appeared, and we prepared to go forth in strange company. In the excitement of preparation for our departure, the little daughter of our cook fell overboard, and through this a strange Chinese custom was called to our attention. As Bret Harte so aptly says:

> Which I wish to remark—
> And my language is plain—
> That for ways that are dark
> And for tricks that are vain,
> The Heathen Chinee is peculiar.

Now by a dark, peculiar Chinese system of reasoning, if one Chinaman saves the life of another, that life is supposed to become his own, and he may be called upon to sustain it. As Chinamen are usually blessed with quite as many children of their own as they can possibly support, and particularly as the child overboard was only a girl, no one, in the absence of her father, seemed to care to rescue her from a watery grave. However, hearing the commotion, a dashing young bachelor of our party rushed to the young lady's assistance and amidst the grins of the onlookers hauled her from the water, none the worse for her cold bath, though the Chinese bathing season had long since closed. Of course we impressed it upon our bachelor friend that according to good Chinese law the little girl belonged to him, but he waived his claim in favor of anyone who cared to assume it, while she shivered near her father's improvised cook stove.

The rescue being over, we shoved off in the cormorant boats. Each boat carried two Chinamen and about twenty birds, and thus



A Veritable Cormorant-net

we went fishing without bait or tackle, save a hundred big, black birds. I took my seat in one of the boats surrounded by cormorants that seemed to stare in open-eyed amazement at this strange type of man that had broken into the monotony of their uneventful lives. However, beyond a subdued muttering, as though discussing me in a polite undertone, they paid no further attention. Some spread their wings to the morning sun (hung themselves out to dry as it were), and others improved the opportunity by taking a little nap. As I looked them over at close range I could but sympathize with the fish that found itself within one of those cruel beaks with its formidable looking, almost right-angled hook at the end. As we headed out into the lake for the fishing ground, I took stock of the other appliances in the boat. Forward was a compartment half filled with water ready to receive the catch, for a Chinaman buys his fresh fish alive, even in the fish markets of the city. A light bamboo pole about twenty feet long and a small dip net completed the outfit.

As we neared the fishing ground, the boats formed in line abreast about fifty feet apart. One man continued to scull the boat from astern while the other took up the bamboo pole and began to stir up the cormorants. Perhaps it was on account of the chill of the morning, or possibly just from laziness, that the birds were so loath to take to the water. Some were shoved overboard with the pole, others were thrown into the water by hand. One old bird in my boat watched the proceedings with evident interest and he was the last to go overboard. Just before he went I am almost certain that he gave me a deliberate wink, as much as to say, "Keep your eye on this old bird if you wish to see things doing."

In the water within a space about 200 feet long by thirty or forty wide there were now a hundred cormorants, each the very embodiment of alertness and energy. They fairly darted here and there, on the surface, under the surface, and deep down out of sight. The speed with which they traveled under water was astonishing, and as one would pass the boat in pursuit of a fish a few feet beneath the surface he would appear almost as a black streak.

The man with the pole was now in the bow of the boat shouting and whistling to his birds and urging them on to greater effort, while the sculler slowly forced the sampan ahead, at the same time drumming with one foot upon a loose board in the bottom of the

boat to start the fish from their lurking places. Did a cormorant remain on the surface but more than a moment, down would come the bamboo pole on the water near him with a resounding whack, and like a flash he would disappear beneath the surface. The boats forged slowly ahead while the cormorants worked back and forth in all directions, but advancing generally at about the same speed as the boats. Thus a veritable cormorant net was sweeping slowly forward through the water.

Soon it became evident that small fish were being caught, for as a cormorant came to the surface the flick of a fish's tail would be seen as the fish disappeared head first into the birds' dilatable throat. The younger cormorants had bands tied around their necks of such size as to prevent them from swallowing fish large enough to be of use to their owners, but the older birds seemed more worthy of confidence. Now a bird would appear with a fish weighing probably three quarters of a pound with his head in the bird's mouth and his tail pointing skyward and vigorously flapping. Quickly the poleman placed one end of his bamboo pole in the water just under the bird, who clasped it with his feet and was lifted on board and robbed of his fish. I say robbed of his fish, but this is hardly true, for when thrown into the water again a small fish would be tossed him in payment—a regular supply of these small fish being on hand. One old bird was not paid promptly and the boatman could neither drive him away from the side of the boat nor make him dive until a small fish had been tossed him, which he caught in the air, and then dived almost instantly. When a bird brought a fish to the surface larger than he could easily manage, the dip net was brought into play.

Suddenly, about twenty yards astern, there was a great commotion in the water. A cormorant (I feel sure it was my old friend of the wink) had brought a fish to the surface weighing several pounds, and from the struggling and splashing going on, he had clearly undertaken more than he could accomplish. Quickly our boat was headed toward him and several other cormorants darted to his assistance, but alas, as is ever the case, the biggest fish was the one that got away.

After about twenty minutes of this strenuous fishing the cormorants were assisted back to their outriggers on the boats by means of the bamboo poles, birds from the different boats being

identified by pieces of colored cloth tied to their wings. Each bird promptly shook himself and hung himself out to dry, for their feathers were "wringing wet." Nature, for some reason, has failed to provide them with the water-shedding oil so well known to us as being part of the equipment of a duck's back.

What was considered an average day's work for a bird, I have no way of knowing, but in the twenty minutes of fishing I should say that the boat I was in received about a pound of fish a minute. Between each run, as it were, the birds must be allowed to dry, and still they make a living for their owners. That the fish from the cold waters of the lake were delicious I can certify from personal experience. When one takes into consideration the number of cormorant fishers, he can decide for himself whether or not cormorant fishing in Ta-hu is an industry.

Necessity, the mother of invention, has in this instance surely developed an occupation interesting to the stranger. The next time you get an outing, if you will cross the Pacific and go back into China to the Ta-hu Lakes, you can see it perfectly easily for yourself, provided the direful rumors of things to come in Kiang-su have not developed into realities, and provided also that in the change from China, the Flowery Kingdom, to China, the Republic, the fishermen have not exchanged the cormorants of Ta-hu for the fishtraps that are so rapidly denuding our own waters of fish.

THE U. S. NAVY AND THE JAPANESE EARTHQUAKE

By Lieutenant S. G. Lamb, U. S. Navy

AT NOON on September 1, 1923, there occurred one of the most terrible cataclysms of history, the earthquake that destroyed Yokohama and a great part of Tokyo, killing thousands upon thousands of people and leaving more thousands injured, destitute and homeless. The earthquake was followed by fire that raged for days afterwards and completed the destruction inaugurated by the original misfortune.

Little is known to the service at large or to the American people of the relief work done by the United States Navy at the time of the Japanese earthquake, and an article setting forth the principal activities of our officers and men at this time will doubtless be of interest. The Asiatic fleet, under the able command of Admiral E. A. Anderson, U.S.N., went to render what assistance it could to the stricken people and to foreign nationals. This fleet upheld the best traditions of the service, and through its work added another page to the story of the glorious deeds of our Navy.

The Asiatic fleet passes the summer round about Chefoo, Shantung, North China, and late in August, 1923, the following vessels went to Dairen, Manchuria, as a part of the summer schedule for liberty and recreation: the *Huron,* flagship of Admiral Anderson; the *Stewart,* flag, Destroyer Squadron, Asiatic, Captain G. S. Lincoln, U.S.N.; Destroyer Division 38, comprising the *Tracy,* flag, *Barker, Borie, Smith-Thompson, Whipple* and *John D. Edwards;* the *Hart* and *Rizal* of the Mine Detachment, and the *Black Hawk.* Admiral Anderson did not accompany the *Huron,* but remained at Chefoo on the *General Alava.*

While lunching with the director of the South Manchurian Railway on Sunday, September 2, 1923, Captain C. D. Stearns, U.S.N., chief of staff of Admiral Anderson, received the first news of the

earthquake at Yokohama and Tokyo.[1] He immediately got into radio communication with Admiral Anderson at Chefoo and at the same time gave orders for all ships to make preparations to leave for Japan at short notice. The *Stewart* was ordered to stand by to leave immediately for Yokohama. Within twenty minutes of the receipt of the order for getting under way, the *Stewart* reported ready to proceed. Fortunately, all officers and a great majority of the crew were aboard. While awaiting final orders, the general recall was hoisted and word was sent ashore to recall as many men as possible.

Since the fleet and the governor at Darien were both unable to obtain definite information, the assumption was that what had happened in the Yokohama region was of sufficient magnitude to disrupt radio and cable communications and was therefore serious. In this case no news was apparently bad news. The following quotation from the official report indicates the orders given to the *Stewart*: "At 4:10 P. M., 2 September, no further news having been received, the U.S.S. *Stewart* was despatched to Yokohama with orders to inform the Japanese Government upon arrival of the commander-in-chief's offer of the services and the resources of the U. S. Asiatic fleet and to express his deep sympathy. The *Stewart* also had orders to investigate and report on conditions at Yokohama and Tokyo, also to report on conditions of the Embassy, Consulate, Naval Hospital and their staffs, and for American citizens in general." While enroute, additional orders were sent to the *Stewart* to make a running survey of the approaches to Yokohama with sonic depth finder and to report upon the conditions of lights, navigational aides, etc. The reports she submitted in obedience to the latter orders were of great benefit to shipping then enroute to Yokohama. On that same day at about 8:00 P. M., Division 38 left for Yokohama, with the squadron commander aboard the *Tracy*. The *Borie*, of that division, was sent to Nagasaki, and later, the *John D. Edwards* to Kobe. This

[1] As regards information upon which the fleet movements were based, the following statement from the official report of the commander-in-chief to the chief of Naval Operations, dated October 13, 1923, and which is slightly at variance with the text of the article, is quoted. "The first news of the Japanese earthquake received by the Asiatic fleet was at 1100, 2 September through an unofficial telegram to a Japanese newspaper at Darien, a detachment of the fleet being there for liberty purposes."

was done for the purpose of forming a radio chain between the *Stewart* and the commander-in-chief, and was an essential feature, in the disposition of forces, and subsequent operations. The *Huron* and *Black Hawk* left for Chefoo to load with medical supplies, provisions, etc., preparatory to sailing for Japan.

The *Huron,* after arriving at Chefoo, bought all provisions obtainable; among other supplies she took aboard 10,000 pounds of fresh beef, which was killed and dressed after her arrival at Chefoo. The *Black Hawk* was despatched to Tsingtau to take on all provisions obtainable there. A few of the items taken aboard were rice, flour, beans, fresh meat, potatoes, canned goods and mats for temporary shelter. The 45th Division at Chinwangtao and the *Bittern* at Tientsin could not leave until their liberty parties were recalled from Peking. These ships took on all available tents, blankets and medical supplies from the Army at Tientsin and from the Marines at Peking. The *Pecos,* enroute to Manila, was ordered to make best speed, to take on oil, and to fill up to capacity with rice, salt, flour, beans, ether, bandages, cotton, surgical instruments, blankets, mosquito nets, picks, shovels, coffins, lumber, hardware, clothing and other emergency and medical stores, and to start for Yokohama. The *Abarenda,* up the Yangtze at Hankow, was ordered also to buy all emergency and medical supplies obtainable and to load day and night until she could start for Yokohama. Orders were sent at the same time to other ports to purchase and load all available supplies and to start ships for Yokohama. One went to the naval purchasing officer at Shanghai to fill the first eastbound Shipping Board vessel. He put 4,000 tons of supplies on board the S.S. *President Grant* and had them enroute to Yokohama in a short time.

The *Stewart* arrived off Oshima Island, about seventy-five miles from Yokohama, at daybreak on Wednesday morning and headed up for Yokohama. It was from here on that the signs of the earthquake were noticeable. Whole villages could be seen demolished and burned; trees were uprooted; slides had occurred on the hills; wreckage was encountered in the bay; there was a cloud of smoke over the active volcano on Oshima, and all signs pointed to a terrible disaster.

Whenever under way for any length of time the *Stewart* took deep sea soundings with the sonic depth finder. From Oshima to

Yokohama harbor the soundings taken in many places did not agree with those shown on the chart, thus showing the effects of the earthquake.

From the entrance to the Gulf of Tokyo to the anchorage at Yokohama Harbor the scene was indescribable. The bay was covered with wreckage and dead bodies floated everywhere, some apparently having suffered death from drowning, some from fire, others from both. As the *Stewart* approached Yokohama, the most noticeable thing was the heavy clouds of black smoke which

DEVASTATION AT YOKOHAMA

hung over the city. Fires were counted in fifteen different sections. Northward toward Tokyo similar clouds of smoke could be seen.

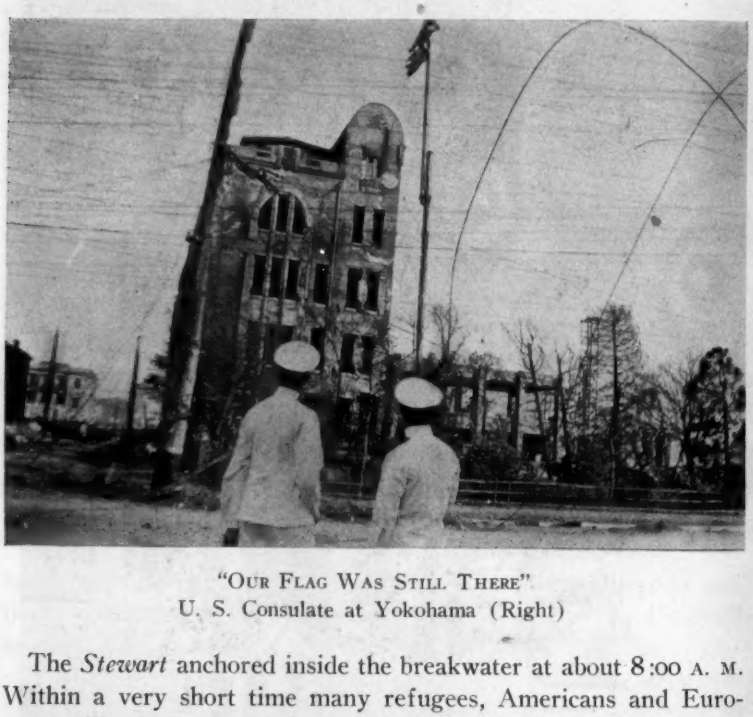
Yokohama Harbor was filled with craft of all descriptions. Most noticeable of all were two liners, the British *Empress of Australia,* and the French *André Le Bon,* the captains and crews of which performed such noble deeds, and without whom the foreigners in Yokohama would have been in a sorry plight indeed in the few days following the disaster.

It could be seen, upon nearer approach, that the entire breakwater had sunk to the water's level, and in some places below it.

RUINS AT YOKOHAMA
Japanese Cruiser apparently of *Kuma* Class in background

The breakwater entrance could be located only by the breakwater lights, which, curious to say, were still burning.

The scene, looking shoreward, was terrible—the harbor filled with wreckage, dead bodies, partly burned boats and sampans; fires in the city; everything demolished and on the ground, with here and there a wall standing; three or four buildings standing bravely amid the ruins, among them the Yokohama Specie Bank and the new telephone building; a few houses still standing on the bluff; the naked flagpole where the U. S. Consulate had been; over all the black smoke and the stench of burned flesh.



"Our Flag Was Still There"
U. S. Consulate at Yokohama (Right)

The *Stewart* anchored inside the breakwater at about 8:00 A. M. Within a very short time many refugees, Americans and Europeans alike, had made their way aboard, not wanting anything, but just happy in the fact that help had arrived in the guise of an American man-of-war, and happy to be standing under the Stars and Stripes.

Some of the refugees told tales of hairbreadth escapes; all of them had lost everything they had in the disaster; some had lost husbands, wives, children; all had some sorrow and some personal

loss. Remarkable tales were told: how one man and his sons had saved the S.S. *André Le Bon* from destruction by fire at the pier, where she was tied up with some of her machinery on shore undergoing repairs; how another man had escaped from an office where all others were killed; how people fell with buildings and came out alive; what heroic deeds had been done by some people; how bravely the mass of the Japanese people had borne up.

Among others to come aboard were the assistant naval and military attachés, who were able to furnish valuable information to the commanding officer concerning the ambassador, the consuls and the Americans at Yokohama and Tokyo. No sooner had the *Stewart* anchored, therefore, than the commanding officer undertook to locate the ambassador and consuls; calls were made on the Japanese Navy, represented at Yokohama, and on the harbor authorities, notifying them of the expected arrival of the remainder of the Asiatic fleet.

The motor sailing launch of the *Stewart* was loaded with provisions and medical supplies and sent to Tokyo under charge of an officer to furnish immediate assistance to the American ambassador and staff. Arrangements were made to begin taking care of Americans and foreigners and to render all aid possible to the Japanese Government. Attempts were made repeatedly to get into radio communication with the commander-in-chief, but this could not be accomplished, owing to the heavy volume of radio traffic. As a matter of fact, this traffic was so heavy and so continuous that it was found necessary after the arrival of the destroyer squadron to send a destroyer to sea every night to maintain communication with the commander-in-chief, prior to his arrival on the *Huron*, and afterwards to maintain communication with the outside world.

One destroyer of the 38th Division was left at Nagasaki and one at Kobe to afford radio communication. In connection with the Peking and Shanghai U. S. Naval Radio Stations this service was established and was invaluable to all concerned, as the badly crippled Japanese radio stations were heavily overcrowded. This service handled all communications from the American State, War and Navy Departments, in addition to the forwarding of hundreds of incoming and outgoing commercial, personal and press messages.

It is worthy of note that the *Stewart* was the first foreign man-of-war to arrive at Yokohama after the earthquake. H.M.S. *Despatch* arrived off Yokohama at about 2:00 P. M. the same day and at 4:00 P. M. the 38th Destroyer Division arrived. By 5:00 P. M. the *Whipple* was underway for Tokyo with supplies for Americans and foreigners there. This destroyer was the first foreign man-of-war to enter Tokyo harbor in over seventy years, so far as is known.

A daily service was maintained between Tokyo and Yokohama by American destroyers during the stay of the Asiatic fleet, and a station ship was kept at Tokyo. This was of the utmost value to all nationalities, as it provided transportation between the two cities and assisted materially in the functioning of the diplomatic and business interests.

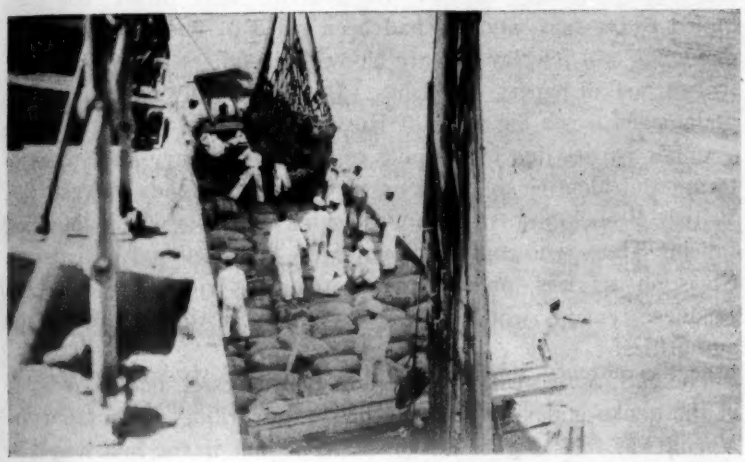
The destroyer squadron received reports that Americans and foreigners in the coast towns and summer resorts had not been looked after. At 1:00 A. M., upon the night of arrival of the destroyers, the *Barker* got under way and went to the assistance of the Americans at Odawara and returned late that day with fifty-two refugees. The *Whipple* brought back from Tokyo eighty-five people, mostly women and children. The *Smith-Thompson* started around the peninsula at daybreak and later brought back 150 foreigners, ten of them stretcher cases from Kamakura, Zushi and Hirama. A few days later the *John D. Edwards* took supplies and picked up the last marooned foreigners desiring to leave, as far south at Shimidzu.

The *Huron* arrived at Yokohama at about noon on Friday, September 5, and one of the admiral's staff was immediately sent ashore to find the Japanese authorities. He located Captain Y. Torisaki, commander of the Japanese naval forces ashore, and informed him that the fleet had supplies aboard and asked what disposition he wished made of them. They went together to the governor of Kamakura Prefecture, who was quick to grasp the fact that the supplies were being placed entirely at their disposal, and who realized in what spirit they were being offered. The next morning these supplies were transferred ashore and turned over to the Japanese authorities.

Upon arrival, Admiral Anderson called a conference of all interested in foreign relief work and plans were made for most

expediently carrying on this work. Tons of food and clothing were turned over to the *Empress of Australia* and the *André Le Bon,* on board which ships were hundreds of refugees. Admiral Anderson went to Tokyo to confer with Ambassador Woods, who had a temporary embassy at the Imperial Hotel. Here further plans were made for carrying on relief work.

In the meantime, the 45th Division arrived from Chinwangtao, the *Black Hawk* from Tsingtau, and the *Abarenda* from Hankow. Captain C. S. Freeman, U.S.N., commander of Destroyer Division 45, was sent to Kobe to take charge of all relief work there. Hundreds of foreign refugees from around the stricken area had been pouring into Kobe since the earthquake. The *General Alava* had arrived at Kobe with medical supplies and was carrying on relief work. The *Black Hawk* was sent to Tokyo, where she unloaded what supplies she had taken aboard. In addition to those supplies turned over to the Japanese at Tokyo, sufficient supplies were furnished the embassy to care for 700 foreigners and 1,700 Japanese for three weeks. Supplies were also turned over to Ambassador Claudel of France to care for his embassy and for a Catholic Convent. A tent camp was erected and food supplied at the embassy grounds in Tokyo, and another was prepared for the consulate general and for American business men at Yokohama.



JAPANESE SAILORS HELPING UNLOAD U. S. S. "BLACKHAWK"

Transportation was furnished from Kobe to those American business men who had returned or were sent to Yokohama to look after their interests. Headquarters were provided on the *Huron* for American civilian relief committees. Ambassador Woods made the *Huron* home for his wife, mother and himself until the *Huron* left Yokohama. In other words, during her stay at Yokohama the *Huron* was the center of American activities in Japan.

Working parties from all ships were sent ashore with American and foreign business men to recover valuables and records. Over forty-seven safes and vaults were broken open and the contents recovered. In most of them the contents were intact; one contained $3,000,000; another had been rifled of $400,000 worth of diamonds and jewelry by safe blowers; in others the intense heat had turned all papers into ashes. In one the only paper currency undamaged was a big stack of Russian roubles.

Other parties dug in the piles of broken masonry and stores to locate and identify the remains of victims. Friends or relatives, British, French and American, indicated the spots where they had fallen. Those who could be found were cremated and buried with Christian services, or else turned over to friends or relatives. Japanese remains which were recovered were turned over to the authorities.

The S.S. *Selma City,* a Shipping Board vessel, had been holed in the quake and later was beached. A working party from the *Huron* was sent to give assistance. The hole in the hull was covered over, a collision mat was put over the covering, a fifty-ton cement patch was poured inside, and she was floated and saved.

The S.S. *President Wilson* arrived in Yokohama with her boilers salted up and short of fresh water. American destroyers were sent alongside of her to make and supply fresh water, and working parties cut out, plugged and replaced a number of boiler tubes on this ship. Other Shipping Board ships came into Yokohama short of water and were supplied by American destroyers. Various destroyers went alongside the incoming liners, took the Yokohama and Tokyo bag mail from them, and went alongside the battleship *Ise* and delivered it to the Japanese.

At the request of the Japanese authorities, two destroyers were furnished to transport Japanese refugees from Yokohama and Tokyo to Shimidzu. Under like conditions, two destroyers were

anchored off Honmoku every night to light up with their search lights that undestroyed suburb of Yokohama. U. S. Navy motor sailing launches were used to unload supplies from Japanese men-of-war. The sailors worked until midnight and at times later, coaling and unloading supply ships.

Washington put the vessels of the Shipping Board under Admiral Anderson's command. The U. S. Steel Corporation offered its freighters, but they were not needed. Officers and men of the Merchant Marine responded in true sailor fashion to the need of the stricken. When the captain of the S.S. *Suruga* heard that the ambassador's mother was on the *Huron* he sent his brass bed to her.

For several days after the arrival of the fleet all information furnished the various United States press services was supplied by naval officers designated by Admiral Anderson, by direction of the Navy Department, for this duty. The Navy alone turned over between $650,000 and $700,000 worth of supplies to the Japanese authorities. The promptness with which they were delivered enhanced their value fourfold. Food, clothing and medical supplies were the chief articles. More than 700,000 feet of lumber, with nails, saws and hammers, was another item.

When Admiral Anderson and Ambassador Woods called on Premier Yamamoto, the latter spoke as follows:

Out of Japan's disaster has come a realization of the friendship of America and other nations in our hour of need. The prompt arrival of the American Asiatic fleet and the way it took hold has been an inspiration to our people.

Premier Yamamoto wrote to Ambassador Woods:

At this moment it is my agreeable duty to express to your excellency and also to request you to kindly convey to the American Government and to Admiral Anderson the gratified appreciation of the Japanese Government and people for the timely and unexampled generous action taken by the American Navy. I may add that I, in the capacity of the Prime Minister and Minister of Foreign Affairs, and the Minister of the Navy, am sending to Admiral Anderson Mr. T. Matsudaira and Rear Admiral K. Yamauashi as my personal representatives to offer our sense of heartfelt thanks for the services rendered by the fleet.

The following is an extract from a letter of Rear Admiral Kobayashi to Admiral Anderson:

Taking this opportunity, Rear Admiral S. Kobayashi, commanding the Japanese Third Squadron, wishes to express his Navy's sincere and heartfelt

thanks to the U. S. Navy for the prompt and invaluable assistance his command have given to the Japanese nation in this terrible disaster.

One vernacular newspaper, referring to the American and British men-of-war in Yokohama harbor, wrote in this manner:

They have dispatched a part of the squadrons under their command to the headquarters where our fleet is located and will receive orders from our government. They issued orders to meet the emergency on their own responsibility. An unparalled situation has developed. The fleets are co-operating as if they were the fleet of a single country. This situation has moved our navy in a pronounced manner.

S. Sheba, publisher of the Japanese *Times* at Tokyo, wrote to Admiral Anderson:

Your prompt and assiduous work for the sufferers of the great earthquake and fire has so appealed to the heart of every living Japanese that no one can help but be convinced of the great friendship of your nation toward us.

At the same time the prompt action and efficient manner in which the relief work has been carried out by the officers and men of your command saved lives and was of the greatest value otherwise.

On September 21, believing that the emergency had passed and that the fleet's work was done, Admiral Anderson sailed from Yokohama for Shanghai with the greater part of the U. S. Asiatic fleet.

JOINT ARMY AND NAVY OPERATIONS
PART VI

By Captain W. S. Pye, U. S. Navy

IN THE previous articles of this series our attention has been centered on the activities pertaining to what might be termed the preparatory phase of joint operations. In our discussion of this phase we have called attention to—

(a) The necessity for joint war plans and effective departmental cooperation.

(b) The importance of mutual confidence between the Army and Navy.

(c) The advisability of assigning joint command for large operations.

(d) The necessity for determining a definite objective.

(e) The importance of joint training.

(f) The various types of joint operations.

(g) The nature of army and navy preparations for joint operations.

(h) The provision, loading and movement of transports.

Although each of these subjects has an important bearing upon the efficiency of joint operations, they are but preliminaries in which the considerations concerning the enemy and the nature of the theater of operations have been given but little consideration. In this, the last article of this series, it is proposed to discuss the strategical and tactical considerations pertaining to joint operations.

Strategical Considerations.—Joint operations are inherently offensive from the strategical point of view and in nearly all cases demand active and sustained offensive tactical operations to insure success.

The vital strategical conditions from the naval point of view are:

(a) *That command of the sea is assured.*

(b) *That the means of transportation are equal to the demands*

not only of the original expedition but the required replacements of personnel and material.

(c) *That there shall be a suitable base of operations available.*

(d) *That the landing places be suitable for landing operations from the naval point of view.*

The Command of the Sea.—The most essential of all conditions for effecting a successful landing on an enemy's coast is command of the sea, and it must be reiterated that command of the sea includes command of the air above and of the waters beneath the surface.

Not only must the Navy insure the safe arrival of the convoy at its destination but it must guard the convoy, support the troops by gunfire preparatory to and during the disembarkation, and prevent the interference with communications between the convoy and shore, and between the base of operations and the home territory.

Naturally, the special situation has a bearing upon the chances which may be taken in attempting to transport troops while the command of the sea is still in dispute. In the Russo-Japanese War, Japanese troops were transported to Korea before the command of the sea was secured. The conditions presented were unusual in that the landing was made in a territory where active opposition was not anticipated either by the enemy or by the inhabitants; that the distances oversea were short, and that the troops could find ample food and water in the occupied territory if such action was necessary.

In operations where severe opposition is anticipated or where the nature of the territory prevents the troops from living off the country, there can be no more serious situation than for an army to have its line of communications interrupted by the defeat of its supporting fleet.

Although not exactly a similar case, the surrender of Cornwallis at Yorktown furnishes an example of a defeat of an army operating overseas because of interference with its sea communications. It will be remembered that the presence of the French Fleet in Chesapeake Bay prevented the reinforcements and supplies which Cornwallis was expecting to reach him by sea.

The permanent security of the sea communications is essential. It was only by virtue of the efficiency of sea communications that

the allied armies were eventually successful at Sebastopol, and likewise it was only when the allied fleet interfered with the Russian communications via the Sea of Azov, that Sebastopol was occupied.

Transportation.—The strategical objective must be carefully considered in relation to the sea transportation which can be made available. A most important consideration is the distance over which troops and supplies must be transported.

Lengthening the lines of communication has two serious disadvantages; first, the increased time taken for a round trip of a transport and the increased chance of disablement, and, second, the increased difficulty of insuring the integrity of the line of communications. Had England been five hundred miles from France it is probable that Germany would have won the World War as the added distance would have increased the shipping required tremendously and the German submarines would have had greater opportunities to attack the transports.

The Base of Operations.—There is one condition inherent in joint operations which has an important, and sometimes a vital, bearing on the strategy of a campaign. This is, the necessity for a suitable base of operations. Although landing operations may be carried on from positions on an open coast, it is essential that in the vicinity of the landing place there shall be a suitable base of operations.

An army is in serious plight when, after landing on shore, its supplies are cut off by weather conditions which make transportation from ships to shore impossible. It is essential, therefore, that the position selected for landing be suitable for the transportation to shore of the troops and necessary equipment.

In the Crimean campaign the transports first anchored in the harbor of Eupatoria about twenty miles north of Sebastopol, but the landing was made on the open beach at Old Fort about twelve miles further south. On the first day the landing of the troops was expeditiously performed, but, later, unfavorable weather prevented landing operations for a period of two days. The allied commanders contemplated the rapid fall of Sebastopol and did not at first consider the establishment of a base of operations essential. Although successful in their first contact with the enemy at the battle of the Alma, they lost confidence when they

approached the fortifications of Sebastopol and decided to change their plan and attack from the southward. While it is probably true that the rumored strength of the Star Fort to the northward had an important bearing on this decision, it is likewise true that the change in plan made the harbor of Balaclava and the Bay of Kamiesh available to the Allies as bases of operations.

While it will always remain an open question as to whether the Allies could have taken Sebastopol from the north by a *coup de main,* it is perfectly evident from the difficulties that they experienced in landing supplies on the open coast, that, had they failed and their flank march around Sebastopol harbor been prevented by the Russian Army, defeat would have been almost certain. The failure to anticipate the need for a base of operations might have resulted in a crushing defeat.

The campaign of Charles V of Spain against Algiers resulted in a most disastrous defeat because the base of operations proved to be unsafe for the fleet of transports. A storm arising after a large portion of the army was ashore destroyed fifteen warships and 140 transports.

While under modern conditions steam vessels are not subject to the dangers from storms to the extent that sailing ships were, there has not been much improvement in the means of landing troops or stores on an open beach. The necessity for continuous supply of men, stores and equipment from ship to shore is probably more important today than ever before and the necessity of a suitable base of operations is fully as great as in the earlier days.

Suitable Landing Places.—Placing the troops and stores on shore is a navy responsibility and consequently the selection of the landing place must not be considered only from the point of view of army strategy. In the past, differences of opinion between admirals and generals as to the best landing places have been frequent and it is in reaching a decision with regard to this that differences of opinion will be hardest to reconcile.

A cause for serious disagreement in this respect lies in the fact that the enemy, being fully aware of which spots are best for landing, will prepare the maximum defense there. To avoid this prepared defense an army commander may desire to land at points very unfavorable from the navy point of view.

The decision is usually a compromise. So far as practicable the naval commander should meet the views of the army commander. A decision must eventually be made and it is to prevent divided responsibility for such decision that joint strategical command is essential.

The vital strategical considerations from the army point of view are:

(a) *That the army force shall be sufficiently strong to accomplish its mission after landing.*

(b) *That the location for landing is suitable for establishing the force on shore.*

(c) *That the terrain is suitable to the anticipated operations.*

(d) *That there are suitable lines of advance toward the objective.*

The Strength of the Army Force.—In estimating the strength of the army force required to accomplish the mission of the landing force the principal factor is, of course, the estimated strength of the army available to the defense, but it must be constantly kept in mind that, first, there may be losses of transports by naval action; second, that if the landing is opposed, casualties will be very heavy; and, third, the operations will have to be conducted in a strange territory probably well defended by fixed positions.

These disadvantages of the attacking force may, in a measure, be balanced by the advantages of the initiative and surprise inherent in the offense, but the very serious predicament in which a failure to be able to continue the offensive on shore places an army, and the still more serious condition of having to re-embark before the enemy, should make plain the necessity for over-estimating rather than under-estimating the force required.

Location Suitable for Establishment of Force on Shore.—The location selected for landing should be suitable for the establishment of the force on shore, and by this is meant a terrain suitable to offensive operations to drive the enemy beyond gun range of the beach; an area of suitable size and characteristics to permit the establishment of at least a temporary base of operations, and conditions favorable to the transportation facilities from the transports to the beach.

A delay in establishing a temporary base on shore from which the troops can be supplied with provisions and ammunition may

be fatal. The importance of being able to continue the landing operation after it is once started must not be overlooked.

Terrain Suitable to Anticipated Operations.—While success in landing is the first step, the suitability of the terrain to the anticipated operations on shore must be carefully considered. A landing on a beach so situated that the objective could be reached only by crossing mountains or rivers, or by passing through easily defended defiles, might be no better than a trap. The terrain should be favorable, first, to an offensive operation to gain sufficient space for the establishment of the army on shore, and, second, to the conduct of operations in the direction of the objective.

Suitable Lines of Advance toward Objective.—That the terrain must be suitable to operations in the direction of the objective has been mentioned above, but, in addition to this, the availability of roads and railroads, or water transportation by rivers must be carefully considered. Transportation on shore for an expeditionary force is usually insufficient, due to the difficulty of transporting animals and to the space required for vehicles.

Where the army is forced to move a great distance to reach its objective, the availability of suitable lines of transportation and of adequate transportation facilities will be of the greatest importance and must be given the most careful consideration.

In addition to the particular strategical considerations pertaining individually to the Army and Navy, which have been discussed above, there are other considerations common to both, the most important of which are the importance of the offensive, the necessity for definite strategical objectives, and the advantage of surprise.

Importance of the Offensive.—Joint operations are inherently offensive from the strategical point of view and in nearly all cases demand active and sustained offensive tactical operations to insure success.

History shows that no really bold landing has been prevented, but success in landing, as in the Dardanelles Campaign, or as in the campaign of Charles V in Algiers, may be completely nullified by an inability to continue the offensive.

Landing operations against severe opposition will result in losses which only troops imbued with the strongest offensive spirit can endure. There is no type of operations in which failure may

be attended by such dire results. It is, therefore, essential that all participants in joint operations recognize that success can only be achieved by an energetic and continuous offensive.

Modern means of defense against landing operations, as will be shown later, have advanced more rapidly than the means of offense. The increased strength of the defense will thus force upon the offense, first, an increased ratio of strength, and second, the most effective use of the initiative which is inherent in the offense, to insure surprise or to mislead the enemy as to the strategical objective.

Importance of Definite Strategical Objective.—In a previous article the importance of a definite strategical objective was discussed, and it was there pointed out that such objective is essential to successful joint operations. In operations in which the Army's interest is paramount the strategical objective usually is not so definite as in those operations in which the Navy's interest is paramount. In order that this may be apparent the statement of these types of operations will be repeated.

The Army's interest is usually paramount in—(1) Invasions. (2) Seizure of enemy colonial possessions. (3) Use of army overseas to create a diversion. (4) Army cooperation with an allied nation.

The Navy's interest is usually paramount in operations to—(1) Seize a base for the fleet or joint operations. (2) Destroy an enemy fortified base. (3) Destroy a blockaded enemy fleet. (4) Exert or relieve economic pressure.

Reference to the above types of operations will indicate that in operations in which the Army's interest is paramount there exists the probability that extensive operations to defeat an enemy army and to conquer a portion of the enemy's territory will be required, whereas, in the type of operations in which the Navy's interest is usually paramount the objective is more local and may be accomplished without the actual destruction of the enemy army forces, should they retire.

While under usual conditions it is considered necessary to defeat the enemy's main force as the first step in conquering a territory, the difficulty of carrying the offensive inland from a base of operations supplied by oversea transportation, is such that the expedition should always have temporary or alternative objectives,

the threat to which will force the enemy to accept an engagement.

An expeditionary force is at a great disadvantage if it is forced to move inland to attack an enemy, because of its lack of adequate transportation facilities. Animals, and wagon and motor transport, require additional transports and unloading facilities. A retreat inland by an enemy army places an expeditionary force at a serious disadvantage provided there is no alternative objective available. This fact does not, however, warrant a retirement without making the strongest possible defense at the beach. At the time of landing, the attacking force is in its weakest condition.

Even in operations in which the enemy army is the main objective it is necessary to consider possible alternative objectives, and in selecting landing places the importance of such objectives must be given consideration.

During the Russo-Japanese War the Japanese were seriously embarrassed by the successive retreats of the Russian Army. These retreats were possible to the Russians because there were no important alternative objectives available to the Japanese. Had there been alternative objectives of such importance that the Russians would have felt it necessary to fight to defend them, the Japanese victory would have been more complete, for by the successive retreats the Russian Army avoided destruction.

In the operations in which the Navy has the paramount interest the objective is more definite, and in some cases the tactical objective may be restricted to a definite spot. Thus, in the case of Port Arthur the Japanese tactical objective was 203 meter hill, because if that position could be gained and held, the Russian fleet could be bombarded from shore. If the Russian Army had evacuated this hill and permitted the destruction of the fleet, the Japanese Army undoubtedly would have merely contained the Russians in Port Arthur and massed more troops against Kuropatkin.

It is impracticable in a short article to consider all the variations in objectives, but it is most important that we realize the necessity for a definite determination of the objective of the expedition and the relation which secondary or alternative objectives bear to the plan.

In the consideration of objectives it must be constantly kept in mind that it is desirable to avoid action, if possible, until the troops are established on shore. For this reason landings are seldom

made in the immediate vicinity of the objective and, where possible, threats of landing are usually made at several points to confuse the defense and to force the enemy to disperse his available force for the defense of several localities. In landing operations, as in most war operations, the greatest assurance of success lies in preventing the enemy from divining our intentions—in surprise.

Advantage of Surprise.—In no form of operations is the principle of surprise more important than in joint operations, for if the troops can be landed unopposed or with but slight opposition, the expedition should be a success. In estimating the required strength of an expeditionary force, extensive losses in landing and also losses of transports enroute must be allowed for. If the force can be landed unopposed this additional force will be available and the morale of the troops will not have been lowered by the terrific casualties which will occur in landing against obstinate defense.

Surprise may be effected by—(1) Secrecy as to the expedition. (2) Misleading the enemy as to the objective. (3) Rapidity of preparation and movement.

Modern conditions in regard to transmission of information—radio, cable, telegraph, combined with efficient news-gathering agencies—together with the increased size of modern expeditions with their enormous requirements as to shipping and troop transportation to ports of embarkation, have made it practically impossible to maintain secrecy with regard to the preparation of an expedition. Even in the days before the advent of the cable and the radio, preparation of large expeditions was usually known to the enemy.

The British were aware of the fact that the French were fitting out at Toulon and neighboring ports, the expedition which Napoleon took to Egypt, but they did not suspect the objective.

King James was aware of the preparations being made in Holland by Prince William of Orange for the invasion of England, yet, due to a false estimate as to where the expedition would land, he made such a distribution of his forces that Prince William landed his army practically without opposition.

These examples show that although absolute secrecy has for several hundred years been unattainable, the fact that the expedition is being prepared may not be especially valuable to the enemy if he does not estimate the correct objective.

In attempting to mislead the enemy as to the objective of the expedition, it is desirable that rumors indicate as many objectives as possible, except possibly the true one. A multiplicity of rumored objectives will be disquieting to the defense and may lead him to disperse his force.

It is possible that the announcement of the true objective may be the best way to mislead the enemy. Lord Wolseley in his *Narrative of the War with China in 1860,* states that the Chinese felt certain that the British did not intend to carry out their proposed expedition because they talked so much about it.

In some documents of Lang-ko-lin-sin this remark was found: "Those who make war keep silent regarding their proposed movements; everything is talked over in secret, the drums are muffled and no flags are shown." After quoting this remark Lord Wolseley adds: "In short, he gave us credit for making war in a more systematic and wiser manner than we English are ever able to do, owing to the extravagant freedom allowed our press on all subjects."

In operations in which the Navy's interest is paramount, the objective is usually so definite that no attempt to deceive an enemy is possible. In such operations, therefore, the application of the principle of surprise is limited to that which can be obtained by rapidity of preparation and movement.

The victories of Germany over Austria in 1866, and over France in 1870, are examples of this form of application of the principle of surprise. The preparation for defense as well as the preparation for the offense requires time, and if one can surprise an enemy by the rapidity of preparation and movement of an expedition the result may be as favorable as if the enemy had been misled as to the objective.

Effective planning in time of peace, and efficient administration to attain the maximum results from the funds and personnel available, will insure rapidity of preparation and movement. When war is declared the opportunity for surprise of this nature soon vanishes.

While rapidity of preparation and movement usually constitute an asset to the offense in the attainment of the objective, there are situations in which it is not vital. Thus, in creating diversions, the threat of an expedition may be adequate to accomplish the purpose

and haste might be both unnecessary and inadvisable. It may, however, be accepted as a rule that in operations requiring a joint expedition, especially where serious opposition is to be anticipated, rapidity of preparation and movement is most desirable.

The British made a serious error in attacking the Dardanelles with the fleet alone. This attack, although repulsed, caused the Turks to anticipate further attacks and the delay in assembling the British expeditionary force permitted the Turks, under German supervision, to create a defensive position which proved to be impregnable.

Among other considerations are climatic and weather conditions. The importance of surprise makes it plain that favorable weather conditions are essential. Bad weather may cause serious delays in landing, which delays, if the enemy becomes aware of the intention to land, may be invaluable to him.

In the operations against Belle Isle in 1761, the landing was delayed fourteen days by bad weather, and in both attacks of the British on Louisburg the landing was delayed for several days during which the French had time to make complete dispositions for meeting the attack.

A knowledge of prevailing winds, of local effects of winds from various directions, and ability to forecast weather conditions in the particular locality, is essential.

The climatic conditions may also have an important bearing on the result of a campaign. In the Crimean campaign the Russians were surprised that the Allies should begin a campaign so late in the year. It must be supposed that the allied generals never expected the campaign to require much time, for the fall of Sebastopol being delayed caused untold suffering in the British Army which was unprepared for the cold winter weather.

The places selected for landing should be such that naval vessels can approach close enough to cover the landing by their fire. Due to the long range of modern naval artillery this condition does not restrict areas as much as in the past, but it must nevertheless receive consideration in making the decisions.

It is desirable for the transports to be able to anchor, but the range of modern mobile artillery is now so great that anchoring in the vicinity of a defended position is no longer possible without undue risk.

Summing up the strategical considerations pertaining to joint operations we arrive at the following conclusions:

Joint operations are inherently offensive, both strategically and tactically, and can be successful only when planned and executed with boldness.

The objective must be definite, but in cases where an enemy force is the objective, alternative objectives must exist.

The enemy must be surprised by secrecy, misleading as to objective or by rapidity of preparation and movement.

A suitable base of operations must be available.

The water adjacent to landing places must permit naval vessels to support the landing operations.

The character of the beach and adjacent terrain must be suitable to the landing and operation of troops.

The terrain and communications must be suitable to the movement of the army toward its objective.

The expedition should be executed, if possible, when climatic and weather conditions are favorable.

Tactical Considerations

We have now arrived at the point where the enemy and the effect of possible enemy action must be given an important place in our considerations. One of the first decisions required is whether or not an effort is to be made to effect surprise landing. We have seen in our previous discussion that the initiative of the attacking force often permits the enemy to be surprised.

If surprise is to be effected it will have an influence upon the disposition of the naval force. In this case, the screen of naval vessels would be reduced in size to that essential for security. If, on the other hand, it were certain that the enemy was expecting attack at the real objective an advance force might be sent ahead to defeat or contain such enemy naval forces as might be operating in support of the enemy base.

It has been pointed out before that a superior naval force is essential to the conduct of oversea operations. It is in most cases possible, therefore, for the attacking force to advance a force of light cruisers, destroyers, aircraft carriers, and submarines with a view to containing enemy forces.

In view of the superiority of the attacking fleet the most effective type of ship for the defense is the submarine which, due to its

power to submerge, may be able to secure information or attain a favorable position for attack, without itself being discovered. It is, therefore, incumbent upon the attacking force to guard itself against observation and attack by submarines and to insure by the arrangement of vessels in the formation, the greatest protection to the transports.

The next greatest menace to the attacking force while distant from its objective is destroyer attack. As the protective screen of the attacking force will probably not be of less than fifty miles radius, even when attempting a surprise landing, it is impracticable for destroyers to make a successful attack on a convoy during daylight. Even at night the chance of a successful attack on transports is small because the transports will unquestionably be the interior ships in large complicated formations. There always is danger, however, that disorder caused by such an attack will result in collisions, but the danger is not great. In areas within which destroyer attack is considered possible, air scouts should search the area within a hundred miles of the convoy shortly before dark in order to ascertain whether or not enemy destroyers are in the vicinity. As the objective is approached, the danger from air attack becomes increasingly great. The strength of the air forces of the enemy may have a determining influence on the plan of operation.

In view of the fact that commercial shipping will have to be used for the transportation of troops, the bombs dropped from aircraft are a serious menace, and it is not too much to say that a marked superiority in the air on the part of the defense might prevent a landing by the destruction of transports and boats engaged in landing troops. The attacking force must, therefore, gain control of the air or at least be able to dispute control to such an extent as to nullify the enemy air-operations.

In case the landing operations are to take place in an area within which the enemy may be able to concentrate an air superiority, advantage must be taken of surprise and an effort made to dispute control of the air long enough to permit the troops to establish themselves on shore.

If the attack is to be made on an outlying base or possession such that the enemy cannot reinforce the defense, the attacking force should have an initial superiority in the air by aircraft from carriers and other ships or must capture a suitable base at which

airplanes transported in cargo carriers in a disassembled state may be assembled and operated to gain the essential control.

As in the case of ships it is essential to gain a superiority before troops can safely be transported overseas, it is now necessary to gain control of the air before effective landing operations can be conducted. There is, however, this important difference in the consideration of aircraft and ships. With an equality in ships the defense has a marked advantage because the offensive fleet is handicapped by an enormous train and convoy and by the dispersal of force required to defend them; on the other hand, an equality in the air is favorable to the attacking force, for as it is assumed that in naval strength and in land forces the attacking force must be the stronger, if the defending air force can be prevented from attacking the transports success is probable.

This consideration leads to the assumption that the air force of the defense must contain a number of bombing planes with sufficient fighting planes to assist the bombers in reaching their objective; the air strength of the attacking force should be primarily in fighting planes with sufficient bombers to destroy the enemy airdromes and artillery positions, once superiority in the air has been temporarily attained.

Scouting by submarines and aircraft has greatly reduced the chances of surprise attack and has, consequently, added very greatly to the difficulty attendant upon the conduct of successful landing operations.

Assuming the attacking force to have sufficient naval strength to bring the convoy through and sufficient air strength to reduce the loss by enemy air attack to a reasonable amount, the next element of the defense which threatens the transports is the mine. The mines which may be encountered are of two general types, the contact mine and the controlled mine. The contact mine explodes upon contact with the ship. The controlled mine is exploded from shore at a time when it is judged to be effective. Both types of mines can be guarded against by the use of paravanes while ships are steaming at cruising speed, but in approaching an anchorage at slow speed the paravane is not effective. It is essential, therefore, that proposed anchorages be covered by mine sweepers before the transports take up the anchorage. This is a serious disadvantage to the attacking force for the most effective landing is a surprise

landing at dawn. As mine sweeping at night is extremely difficult, especially in the determination of areas covered, the attacking force will probably proceed to anchorage following astern of mine sweeping groups.

In selecting anchorages it is essential that areas which are not within range of coast fortifications be chosen. A transport at anchor during daylight becomes an easy target for large caliber guns. The possible location of mobile artillery, such as the 155 mm. and 12-inch railroad mount, must also receive consideration. If it is not possible to locate an anchorage favorable for landing operations outside of probable range of enemy guns plans must be made to nullify the fire of such batteries by covering fire from major ships or by air attack. The advantage of great gun fire is with the defense, for all ranges will have been carefully determined beforehand. In many cases the location of mobile artillery will not be known to the offensive force and it will be most difficult to locate.

When troops were forced to land in pulling boats, the distance of transports from the shore was a serious consideration; and while today it is an important factor, the fact that so many boats are motor-propelled makes the distance of the transports from the beach less of a consideration. If possible, however, transports should reach an anchorage. Ships under way, but stopped, are difficult to manage, especially when operated in groups, as the transports are apt to be.

Disposition of Transports.—Having decided upon the anchorage, it is necessary to consider the desired disposition of the transports preparatory to landing, in order that they may be properly formed before the anchorage is approached. These vessels should be anchored as nearly as possible at equal distances from the points at which their troops are to land, in order that the boats will have approximately the same distances to travel to the beach.

As has been previously pointed out, the transports carrying the troops which are to make the first landing should be of such draft as will permit their reaching the nearest positions to the beach which they can occupy without coming within range of the major caliber guns on shore. Should the control of the air be in dispute, or should the anchorage lie within range of major caliber guns, the transports carrying troops to be landed later, should not

approach the anchorage until their troops are required. Transports carrying troops which are not to be landed during the early operations may be effectively used to make feints at other possible landing places.

The disposition of the transports at the anchorage will govern the formation used during the approach so far as the order of ships is concerned, but whether the ships shall approach the anchorage in line, column, or line of divisions, will depend upon many other conditions. If the anchorage is to be taken up in daylight and the area has been carefully swept of mines, line formation at five hundred yards distance is probably the best formation for the approach; but if the anchorage is to be taken up at night, or if the only mine sweeping operations are those of sweepers ahead of the transports, line of divisions or even column may be better. If the approach is made in column the course should be such that the direction of the column will, at the time of anchoring, be approximately parallel to the beach.

Transportation to Shore.—One of the most unsatisfactory features connected with landing operations is apt to be the means of transportation of troops and equipment from ship to shore. The large motor sailing launches now carried by our naval ships are perhaps the most suitable of any type for the transportation of troops, but, unfortunately, the vessels which usually will have to be used as transports have only moderate sized life boats without motor propulsion.

It is essential in the preparation of transports, that two or more motor boats be provided for towing the ordinary life boats to the beach. The range of modern small caliber field guns, and even rifles, makes it necessary to reach the beach in the shortest possible period of time after the boats come within range. The necessity for skillful handling of transports and transports' boats makes it necessary to man all transports with naval personnel.

As the greatest dispersion of modern gunfire is in range, it is undesirable that the boats be towed toward shore in long strings. Dispersion in the boat formation should, as far as possible, be in breadth rather than depth. The condition can best be met by forming as many columns of boats as there are motor boats for towing.

The approach of the boats to the beach should be made as nearly simultaneously as possible to prevent the concentration of the enemy's available artillery on different portions of the line of boats in succession.

Every endeavor must be made by the supporting aircraft and vessels to prevent the disturbance with the operation of loading the boats and to cover them while approaching the shore. Naval aircraft and combatant ships must endeavor to destroy by counter fire any enemy batteries which may be in a position to shell the boats.

The transportation from the ship to shore of artillery, tanks, stores, motor transport and horse transport is seldom adequately provided for. Ship boats are not suitable. Flat-bottomed boats, small barges and floats are required in large numbers and if these have not been provided before departure they should if possible be constructed on board the transports while enroute.

In preparation for landing the French Army in the expedition to Algiers in 1830, there were constructed fifty-five large barges. Of these, thirty had a capacity of 140 men each. Twelve of the remainder were specially designed for landing the field artillery and thirteen for landing siege artillery. In addition to these, the French had 124 cattle boats for the transportation of animals and thirty flat-bottomed boats for transportation of stores. The cattle boats were small boats suitable for landing troops when the animals had been disposed of. The effectiveness of the French landing is perhaps the best example in history of the reward of adequate preparation for landing operations. It is only by carrying out large joint operations involving landing of troops, equipment and stores that we shall be able to estimate modern requirements of transportation from ship to shore.

Means Available to the Defense.—Before discussing the operations of the offensive force further, it is desirable to examine the means available to the defensive force. Naturally, the defense will be effective in proportion to the means available and to the time afforded for preparation. The effectiveness of modern weapons is such that surprise landings are more than ever valuable, but the aircraft and submarine make surprise landings far more difficult.

It may be assumed that the locations of fixed defenses are known and consequently the locality chosen for landing will not be within range of fixed batteries. The principal weapons employed by the enemy troops may be divided into three main groups according to range, it being understood that as the range decreases the effect becomes accumulative, for the long range weapons are also effective at short range: (a) Railway batteries and G.P.F's. (155 mm.). (b) Seventy-fives (75 mm. field gun). (c) Small caliber, rapid-fire guns, Stoke's mortars, machine guns and rifles.

The railway batteries and G.P.F's. will have a range in excess of 12,000 yards and unless they can be destroyed by aircraft or counter-fire from combatant ships they will deny to transports any area within six miles of their locations. This indicates that in an attack on a defended position the troops may have to proceed in boats across a zone six miles wide without any chance of returning the fire of the enemy.

When the range is reduced to about 7,500 yards the 75 mm. field gun will be available to the defense. At about 3,000 yards the small caliber, rapid-fire gun becomes effective and as the range decreases from 1,000 yards to the beach, the Stoke's mortars, machine guns and rifles are brought into use.

The landing of troops against a properly defended position may reasonably be compared to storming a stronghold on land in which the conditions are such as to make it necessary to cross a plain six miles wide and the troops are required to advance in column of squads without firing until within fifty yards.

This simile will, I believe, indicate how impotent are troops while embarked in boats and indicate the necessity for superiority of aircraft and for effective support from the batteries of combatant ships. Unless the effectiveness of modern defensive elements can be reduced by offensive operations of the aircraft and naval combatant ships, landing against a proper defense is practically impossible. It is, therefore, most essential that there be effective air and artillery superiority. This artillery superiority must be obtained by naval guns.

In addition to the advantages of the defense in weapons of the above types, the defense may make use of controlled mines placed in the water near the shore or buried in the shore. Barbed wire entanglements may also be used in the water and on shore.

Even the natural advantages are in favor of the defense. Rocks and reefs are dangerous. Surf makes landing difficult. The lack of familiarity of the attacking force with the terrain, the effect of the wind and current, and the advantages of cover on shore are detrimental to the attacking force.

In order to reduce the effectiveness of the enemy fire and to assist in making the landing by surprise, it may be necessary to conduct the landing at night. There are, however, many serious disadvantages connected with night landing operations. The embarkation of troops, formation of tows and orderly movement of tows at night is most difficult. It is very difficult to prevent confusion as the boats approach the shore and still more difficult to prevent confusion on shore if the landing is opposed.

In landing at Gaba Tepe at Gallipoli the force attempting a night landing was carried, apparently by the current, about one half mile from the place at which it expected to land. While night landings may be necessary to avoid heavy losses in attacking well defended positions, or to effect surprise, they should not be undertaken without the most careful comparison of the advantages and disadvantages pertaining to such operations.

The naval escort must guard the transports while at anchor against attacks from submarines and destroyers. The defense is simplified if the water is too shallow for submarines to operate submerged. For this reason the anchorage should, if possible, be selected in a depth of less than ten fathoms.

The landing must be supported by fire from combatant ships. In view of the effectiveness of fire from shore batteries against vessels at anchor, supporting vessels will probably have to keep moving and this makes accurate firing at objects or positions on shore somewhat difficult.

Other disadvantages pertaining to supporting fire from ships are the comparatively flat trajectory of naval guns, the unsuitability of naval ammunition, and the limited ammunition supply which must at all times be conserved to such an extent as to permit engaging an enemy fleet if there is a chance that a naval action is possible.

The Plan for Landing.—The Plan for Landing must state:

(a) *The localities in which landings are to be made.*

(b) *The times at which landings are to be made in each locality.*

(c) *The tactical objective of each landing force.*

(d) *The extent of beach to be occupied in each locality.*

(e) *The number of troops assigned to each sector of the beach.*

(f) *The nature of the covering operations to be carried out by the naval forces.*

(g) *The assistance in landing to be given by the naval forces.*

The Location of Landings.—The locations selected for landing are dependent upon the major considerations: namely, extent, suitability and position in relation to the tactical objectives. The position in relation to the tactical objectives is perhaps the most important consideration, yet the extent and suitability of landing beaches is of such importance as often to require a compromise. The extent and suitability of the beaches have a determining influence on the number of troops which can make an effort to land at the same time. The greater the extent of the beach, the greater the number of troops which can be landed simultaneously, but on the other hand the greater the dispersion of force the weaker the average effort will be.

Dispersion of force is not so dangerous in most landing operations as a similar dispersion is on land, for, because of command of the sea, communication between detachments, the ability to reinforce any locality, the greater ease of mutual support, and the ability to withdraw without the enemy being able to follow, are factors which decidedly favor the landing forces.

The extent and suitability of the beaches must be thoroughly considered in connection with the tactical objectives. The main tactical objective is often a hill, ridge or plateau, but as the enemy will usually recognize this an attack from the most convenient beaches will be difficult, because they will be the ones best defended. It may often be necessary to land at some distance from the real objective and conduct operations for its capture after landing. This is exemplified by the landing of our troops at Daiquiri in the Santiago campaign; the landing of the British and French troops at Old Fort in the attack on Sebastopol, etc.

The mobility of troops embarked in transports permits effective feints to be made without actually becoming involved in serious action. Localities for landing may be selected with a view to attacking enemy positions in rear or on the flank. A necessity for

a surprise landing may require an offensive force to attempt a landing at a very unfavorable spot. Thus, as it will be remembered, General Wolfe landed his troops at a most unfavorable place, but by so doing insured that element of surprise which gave him the victory at Quebec.

Times for Landing.—The difficulty of conducting landing operations at night has been previously pointed out, but under some circumstances it may be necessary to accept these disadvantages. The strength of an attack in daylight cannot be kept from the enemy, whereas an attack at night, even though the force be small, will have a great effect on an enemy and may cause him to make unwise dispositions.

At Gallipoli the British carefully considered attempting the entire landing operation under cover of darkness, but decided that for the major landing the complications involved were too great. It was decided, however, to land the Anzac force just at daylight at Gaba Tepe. It was the intention to divert the enemy from the point of the major attack by initiating this attack first. There was much confusion as the tows of boats approached the beach. No land marks could be made out on shore, and the landing was made about 1,000 yards from the designated position. As it happened, this was fortunate, for it removed the attacking force out of range of many of the guns which had been installed to defend the landing at the intended place.

The time for landing at any one locality must be decided upon after a careful consideration of the nature of the beach, the size of the force, the probable strength of the defense, the importance of surprise, and the order in which it is desired that the attacks shall develop.

The Tactical Objectives.—In addition to the definite tactical objective of the entire force the force landed in each sector should also have a definite objective. Such objectives may be indicated by definite points to be taken or by lines which are to be occupied by a definite time. Naturally, the objectives set for the various detachments must be coordinated and must lead toward the attainment of the larger objective of the force as a whole.

Number of Troops.—The number of troops assigned to each sector is dependent upon (1) the strategical objective of the de-

tachment; (2) the anticipated resistance, and (3) the extent of the beach.

It may be generally assumed that the enemy will divine our major objective and will consequently prepare the strongest defense at the most important positions. Where strong opposition is expected the number of troops per unit of length of beach must be the maximum. This maximum, however, must not be so great as to produce congestion either in transportation or in the operations after the beach is reached.

Covering Operations by Naval Forces.—The troops must be supported while approaching the shore by the operation of naval aircraft and naval guns. If a temporary base of operations has been established, it may be possible to assemble army aircraft to take part in this operation.

Covering operations are of two types: (1) preparation for landing; and, (2) support of landing.

Preparation consists of such bombardment as may be effected before the troops attempt a landing. Support of the landing comprises the artillery and air activities during the landing.

The ineffectiveness of naval guns of flat trajectory in searching out trenches or enemy positions over the brows of hills has been mentioned. In order to attain any results commensurate with the quantity of ammunition expended firing must be conducted at a long range, and can be effective only when the fire is controlled by air observation. With long range fire controlled from the air, and with projectiles designed for this use, the bombardment from a large naval force may have considerable effect in destroying enemy defense preparatory to landing.

The supporting fire during landing may be useful even though the trajectory is flat. As the most effective weapons of the defense at the time of landing are small caliber rapid-fire guns, machine guns and Stoke's mortars, any fire from the ships which can be kept within a zone of from 500 to 2,000 yards of the shore line is sure to have some effect.

It was found at Gallipoli that the effect of preparatory fire from naval guns was comparatively slight, but that the direct fire in supporting the landing operations was of great assistance. Perhaps the best example of this is the support given by the

British *Implacable* and *Dublin* at X beach at Gallipoli. It is quite probable, however, that with effective air observation the preparatory fire of naval guns may hereafter be more effective.

Naval Assistance in Landing.—It is the duty of the Navy to transport the troops from ship to shore. If all the boats to be used were motor-propelled, this task would be much simplified. Under the usual circumstances the majority of the boats will not be self propelled and consequently should be towed.

It is disadvantageous to use the boats of combatant ships for this purpose, especially if there is any chance of a naval engagement, but if no other means have been provided, it must be done. It is better, however, that the towing be done, at least for the greatest part of the distance, by tugs having greater power and more resistance to small projectiles.

If practicable the Navy should provide barges or large flat-bottomed boats. These may be used for troops at first and later to transport artillery, animals and stores. Efficient preparation demands that we determine the most satisfactory types and construct sufficient for landing a moderate sized force.

The boats and barges used should be manned by naval personnel, and additional naval personnel may be required to land stores and to complete the system of communication which must be maintained between the ships and the shore.

The Organization.—In organizing the force for landing operations, each distinct section of the beach should comprise a zone of operations. To each such zone should be assigned a definite number of transports, landing facilities, covering force and attendant naval force.

The function of the covering force is to protect the transports from enemy naval and air activity; to make, if required, such preparatory bombardment as may be practicable; and to support the landing operation by both indirect and direct fire against enemy gun positions and mobile troops.

The function of the attendant force is to assist in landing the troops and equipment and stores as may be later required. Such attendant vessels as may be required for towing troop boats or barges should use such batteries as they possess in support of the landing after the boats have been cast off.

Each covering force should have aircraft assigned to it to assist in preventing attack by enemy aircraft; to observe the fire of combatant ships; to obtain information of the location of enemy artillery positions and concentrations of troops and to attack enemy positions and mobile troops when the boats are approaching the beach.

Organization of the Troops.—The troops should be assigned to definite zones of operations except for a small strategic reserve which should be retained under the army commander-in-chief for use as circumstances may require. A commander should be appointed for the troops in each zone. The troops allotted to each zone should be organized in three groups:

(a) The troops which are to seize the beach and drive the enemy back.

(b) The troops which are to support the first group and to consolidate the position gained.

(c) The troops which are not to be landed until certain that the position on shore is at least temporarily secured.

The troops of the first group should be organized in one, two or three landing waves, depending upon the availability of transportation and the extent of the beach. The first wave should comprise the maximum number commensurate with the transportation available and the necessity to avoid confusion in the landing operation. In case transportation is available, but extent of the beach prevents the landing of all troops simultaneously, the second and third waves should follow the first wave at intervals of about two thousand yards. An interval of this amount will prevent serious damage by projectiles which miss their target and will cause a dispersion of the enemy fire. The troops assigned to the first group should land with the lightest possible equipment. Rapidity of movement at the instant of landing is most essential. The arms to be used should be limited to rifles, automatic rifles, machine guns and hand grenades. Rations should be limited to emergency rations for two days and water to that contained in the canteen.

An engineer company and suitable medical corps troops should accompany each wave; also sufficient signal corps troops to main-

tain communication between various units on shore and with the supporting and attendant ships.

The troops of the first wave should immediately take the offensive against enemy machine gun positions and trenches. No place is as dangerous as the open beach. The capture of enemy machine gun positions and trenches will permit the second and third waves to land with less opposition.

Every endeavor must be made by this first group to drive the enemy back from the shore sufficiently far for the second group to land without serious losses and to be able to consolidate a defensive position to which the first group can retire before dark.

In view of the task for the second group mentioned above, it will be seen that it should comprise infantry, machine gun troops, engineers and light, rapid-fire guns and, in addition, sufficient auxiliary troops to provide the troops of the first group with food, ammunition and materials for on shore.

The troops of the first group will be worn out and as soon as the second group has established a suitable defensive position the troops of the first group should retire.

The troops of the third group will comprise the field artillery, tanks, additional engineer troops with material for the construction of landing stages or piers, the transportation units required to permit an advance, suitable equipment, and the necessary supply troops with essential supplies.

Organization of Boat Transportation.—The transportation arrangements at each beach should be placed directly under a naval officer, the boats from each transport being in command of an officer junior in rank, and each boat in charge of a junior officer or experienced petty officer. In addition to the officers in the boats there should be organized a beach guard under an officer designated "beach master." The mission of the beach guard is to prevent confusion of the boats at the beach.

Detailed instructions should be issued to boat officers concerning the position at which troops are to be landed, the method of handling boats when the beach is reached, the duties of the boats after the troops have landed, etc. The effective handling of boats may have a determining effect on the success of the landing, and the best methods can be established only by practice

in time of peace. Even at the possible delay in landing at Gallipoli, Admiral De Robeck insisted that the British troops should have two days' practice in landings under naval supervision. This practice was well rewarded later by the efficiency with which landing was conducted.

Final Word.—In closing this series of articles, the author wishes to make it clear that the ideas expressed herein are purely personal, derived from the history of joint operations of the past and possibilities of the future. If they cause others to think seriously of the difficulty of conducting successful joint operations and form a basis for comment or criticism, they will have fulfilled their mission.

CORSAIRS

By Dr. Ing. Wladimir V. Mendl, A.M.I.N.A.

AS IS widely known, one of the great differences between war on land and on the seas lies in the fact that in the former the armed forces may obtain an advantage from the accidentation of the country, whereas the sea does not offer such irregularities. During the late World War, however, a state of things arose, which, in fact, was for the profit of the belligerents: the using of tricks, we may say scientifically perfected tricks.

Formerly, when battle ranges were short, the opponents meeting at sea hoisted their ensigns, hoisted even some more bunting called battle flags, at their mast heads and began fighting. In these olden times of the sailing ship the similarity of merchant and military naval construction was favorable to tricks. One device was the painting on the hull of a vessel of dummy gun ports to frighten pirates. These painted gun ports were retained later on as an exterior adorning of the hull.

Since the advent of steam, armor and heavy artillery, the similarity has ceased and each type of vessel has been developed along quite different lines. Though no understanding existed, nevertheless, up to the Great War there was a kind of tacit agreement, none of the navies departing radically from what was understood to be a war vessel. This state of things changed during the war. Nearly every kind of trick was applied, from the cap ribbons of British bluejackets on leave bearing the names of vessels already long out of commission to the use of decoy ships and dummies against submarines. Also the war brought about what may be termed the mobilization of floating craft, that is to say the utilization for military purposes of very many ships of every type to be found among the numerous merchant vessels.

A war vessel has to accomplish two principal functions: to float on the water and to fight. But fighting is today more than a simple contest of arms and implies a number of secondary opera-

tions. For this reason one may make use of all kinds of existing vessels fulfilling the first principal requirement, that of floating on the water. This condition accomplished, one is able to provide for the intended use of the ship by her more or less radical conversion. Mine laying, mine sweeping, escorting or mothering of mosquito craft or submarines are a few of the purposes for which vessels, not primarily constructed for military ends, may be utilized, if they are not employed in one of the auxiliary services, collier, oil tanker, supply ship or transport, as greatly increased in number during the Great War as those same services on land.

History repeats itself again and again. The Middle Ages, as a rule, did not know any difference between a merchant vessel and a man-of-war. In the early centuries of modern times the merchant vessels were armed against pirates and corsairs. As we have already pointed out, during the nineteenth century the present large differences between merchant and naval vessels gradually developed. The differences were widest just before the war. Nevertheless, during the war the Allies resorted to the arming of merchant vessels, just as in olden times. We may readily except the few auxiliary cruisers, for which all of the great naval powers made provision since the end of the last century. Their conversion was planned long before any war eventuality and limited by certain rules.

Thus we have today for the naval services almost the same situation as for the land army. The civil army was introduced by Von Stein after Prussia's defeat in 1808 and during the oppression of that country by Napoleon I. With every passing day the principle seems to gain in force, that in a future war the utilization of the merchant navy, the civil navy, will be even more complete.

It is but natural that this should be so. First, we may invoke the causes enumerated above. Second, we must count the ever-increasing expenses of purely military navies, which very few if any nations are able to support any longer. Finally, we have to reckon with the different treaties limiting armaments in the sense that we have understood them up to this time: Versailles for the Germans and Washington for the Allies.

Fighting has been going on as long as breathing creatures have existed in the world and will always continue, but it may change

form. As a matter of fact, it did so in some respect during the late war. If fighting does not cease to exist, any limit imposed upon armaments will do nothing else than to compel it to take another direction and to utilize to the utmost any resources not primarily intended for military purposes.

Thus it may not lack interest to watch the exploits and features of a certain class of vessels of the recent war. The author is aiming at the German corsairs.

"Corsairs" is probably not the right word. It is a word adopted in Allied quarters and rather in a sense of condemnation. As a matter of fact, these vessels have as little of a corsair, who is an outlaw, as the submarine commerce destroyers had. They are vessels of war, respecting all of the limits drawn by international treaties, and their only particularity is their design, intended for commercial work. The Germans, indeed, termed their corsairs *Hilfskreuzer* (auxiliary cruiser), though they are far from having anything in common with this kind of vessel, as it has hitherto been known.

As the world is getting more and more drawn together by international understandings, it is not impossible that one day we may see a treaty requiring vessels used by military purposes to comply with certain exterior features, but, for the moment, no such limitation is in force. Therefore it may be taken for granted that in the event of a future war and of the arising of the same or similar conditions as during 1914-18, corsairs (to keep this definition because it has once been established and is short) will be used by the blockaded nation. Naturally, this is true only for a nation endowed with a sufficiently enterprising spirit.

The condition essential for a revival of the corsairs is the more or less complete blockading of a weaker navy by an enemy, itself enjoying an intense commerce by sea.

This was the case of Germany and Great Britain. The corsairs had first to break the blockade; second, to plant mines off the enemy's coasts; third, to destroy commerce in distant seas, and fourth, to return to port. This last requirement was only of a humanitarian nature—not to sacrifice the crew—and of moral value —to encourage one's own people and to impress neutrals, but in no way was its accomplishment an essential part of success.

Complete success may seem doubtful. It has been denied by the Allies and magnified by the Germans, but anyhow, success was obtained in some measure and history shows that even a few corsairs may inflict quite a lot of damage to a well developed enemy commerce.

Exactly at what time and how the idea of sending out corsairs originated is not known to the author, but it should be borne in mind, that on the morning of August 3, 1914, the afterwards famous *Emden,* made her first capture. This was probably the first German capture on the high sea and occurred only a few hours after the cruiser had received the mobilization order. The prize was the *Rjesan* of the Russian volunteer fleet, captured in the Straits of Tsushima.

As the ship was new, had a good speed, and was generally well adapted for conversion into an auxiliary cruiser (as a matter of fact, planned for by the Russians) the Germans did not destroy her but brought her into Tsing-Tao and armed her with the guns taken from the gunboat *Cormoran,* too inefficient to take part in the naval operations following. As the ship was commissioned with the crew of the *Cormoran* she took the latter's name, too.

She cruised for some time in the Pacific Ocean under the German flag, met Count Von Spee's squadron at the end of August, was released to destroy commerce and finally entered Guam. Here she was disarmed on December 15, 1914, and blown up by her own crew on April 6, 1917, after the United States had declared war on Germany. The military career of this vessel was probably of little import to the general course of the war, even in those distant seas, but her conversion proved to her new owners that the adaptation of ordinary merchant craft to military purposes was quite feasible. However, the exploits of the new *Cormoran* lacked one very important feature of the performances of the corsairs sent out later on from the motherland; she did not run any blockade.

Besides the *Cormoran* we have to note the successful auxiliary cruisers, *Kronprinz Wilhelm* and *Prinz Eitel Friedrich,* which showed clearly that it was possible to escape the vigilance of the enemy, not to speak of the two small sailing vessels, the *Ayesha,* manned by the landing party of the *Emden,* and the *Weddigen,* under the command of the former captain of the river gunboat

Tsingtau and manned by members of the crews of merchant ships.

Two auxiliary cruisers started from home ports, the *Kaiser Wilhelm der Grosse* and the *Berlin*, the first one on August 4, 1914, and the latter about the middle of November of the same year.

In the case of the *Kaiser Wilhelm der Grosse* at least, it may be concluded that the blockade of the North Sea was not quite so intense in the first days of the war as it was later on. On the other hand this vessel had a most characteristic silhouette and could not easily be mistaken. Such are the antecedents of the question.

On March 10, 1915, the *Prinz Eitel Friedrich* and a month later the *Kronprinz Wilhelm* put into Newport News, escaping the Allied cruisers.

It may be supposed that the plan was at once conceived of renewing their lost activities in foreign seas. On August 9, 1915, the corsair *Meteor* was sunk in the North Sea by her own crew, the vessel being attacked by four British cruisers and her chances of escape being *nil*. First she had sunk the British auxiliary cruiser, the *Ramsay*. The *Meteor* seems to have been the first attempt of the Germans to send our corsairs.

However, her bad luck did not discourage her owners, for shortly before New Year's Day, 1916, they sent out another vessel, the *Moewe*, which met with more success. She planted mines in three different places off the British coasts and the day following the termination of this operation the British battleship *King Edward VII* struck a mine and sank. The fatal mine seems to have been one of those planted by the *Moewe*.

After these exploits the corsair cruised in the Atlantic Ocean operating against commerce. She was highly successful in this respect, for she captured fifteen vessels, twelve British steamers and one sailing vessel, one French steamship and one Belgian boat, with an aggregated total of nearly 58,000 gross tons.

One of these captures was the *Appam*. She was captured on January 15, 1916, and was soon afterwards sent to Hampton Roads under the German flag and with a prize crew and all of her passengers aboard, whose number had been increased by the crews of the previously captured steamers. She arrived in the United States on February 15, 1916.

Another captured vessel sent to the neutral port, Santa Cruz, Teneriffa, in order to relieve the *Moewe* of her numerous prisoners, was the *Westburn.* She entered port safely, disembarked her passengers, put out to sea again and was sunk by her own crew.

After having thus impaired the enemy shipping in the Atlantic ocean the *Moewe* ran the blockade for a second time and entered her home port on March 4, 1916, having kept the high sea for several months.

Meanwhile, encouraged by the successful start of the *Moewe,* the Germans had sent out a third corsair about the end of February, 1916, the *Greif.* Like the *Meteor,* she met with ill luck and was sunk in a fight with the British auxiliary cruiser, *Alcantara,* on February 29, 1916, before leaving the North Sea. The Germans say that she was blown up by her own crew, while the British claim that she was sunk by the *Alcantara* after only twelve minutes of fight. Certain it is, however, that not only the *Greif* was sunk but the *Alcantara* too, apparently by a torpedo fired from the sinking corsair. Although it is bitter reality, it sounds almost like the story of the two lions meeting in a fight and devouring one another until only the two tails were left.

During the spring and summer months all activity of the corsairs ceased, because the short northern nights and the clear weather during the day were not favorable to blockade running operations. The Germans had become bolder and at the end of the year sent out two vessels at the same time. On November 22, 1916, the *Moewe* sailed again and on November 30, 1916, after two unsuccessful attempts a few days earlier, a new corsair, the *Wolf,* left her home port.

It seems that since her return to port, the *Moewe* had been in the hands of the yard for repairs and conversion, based on the experience of the first cruise. Apparently, this time the vessel did not undertake any mining operations, but proceeded at once to the Atlantic Ocean where she destroyed commerce with some success. This success was evidenced by the number of 400 members of the crews of vessels captured and sunk, who were gathered on board of the corsair up to December 11, 1916, and who meant full quarters. To relieve the vessel from these prisoners the captain decided not to sink a steamer captured this same day, the

Yarrowdale, but to transfer them to her. As the *Yarrowdale* happened to have on board enough coal for four weeks and, moreover, could develop a good speed, she was particularly suited to be sent home instead of to a neutral port as last time. The two vessels parted on December 13, 1916, and on December 31, 1916, the *Yarrowdale* safely entered Swinemüde with a prize crew of sixteen and 469 prisoners on board.

The day after the capture of the *Yarrowdale* another steamer was captured, the *St. Theodore,* having on board 7,000 tons of American coal. This fact saved her from being sunk. She followed the *Moewe* with a German guard on board or had rendezvous in different places, the corsair coaling out of her. At a given moment it was decided to convert her into a corsair too, a wireless station being built and a few guns being taken on board.

On December 27, 1916, the new corsair, christened *Geier,* started on her cruise. She had not a very good speed, for which reason her captain got orders to operate mainly on the routes of sailing vessels. At different dates the two vessels met and the *Moewe* coaled out of her satellite. When the coal was exhausted the vessel was sunk on February 14, 1917, for, as the captain of the *Moewe* states himself in his memoir of the cruise, the *Geier* had not had much success. He was unable to send her on perilous operations, as the ship had on board his coal reserve and he did not dare risk its loss.

Meanwhile, during the early days of January, 1917, the corsair captured a very small and slow Japanese steamer with a cargo for the still neutral U.S.A., the *Hudson Maru.* This boat, too, was not sunk and, the prisoners being transferred to her, she was sent to Pernambuco, Brazil.

During the night between March 20-21, 1917, the *Moewe* entered Kiel again, having sunk ships with a total of well over 100,000 gross tons and bringing back some 400 prisoners, although several hundreds of them had already been sent to the motherland or to a neutral port.

Of the *Wolf* we have stated already that she left port a few days after the *Moewe.* From the very beginning it was intended that she was to cruise in the Indian Ocean and to plant mines there. This was accomplished off the South African coast and in Indian waters.

Like the *Moewe,* the *Wolf* proceeded, shortly after having reached the Indian Ocean, to the conversion into an auxiliary cruiser of one of her captures. The *Turritella* took a 1.97-inch (50 mm.) gun and a wireless station on board, and was commissioned with a German crew of twenty-seven under the name of *Iltis.* However, she was very quickly surprised by a British gunboat laying mines off Perim and destroyed.

Besides this, the *Wolf* kept another ship afloat, the *Igotz Mendi* of 4,648 tons gross, with a cargo of coal, which was transshipped gradually. Finally, the *Wolf's* crew attempted to take the vessel to a German port and would have succeeded in this attempt, had she not run ashore off the Skaw Lighthouse, Jutland, Denmark, just before reaching a German port.

During her cruise the *Wolf* got as far as the Pacific Ocean, which she reached by sailing around Australia. She returned home early in 1918 after having kept the sea for 451 days and having steamed about 64,000 miles. In Germany many people considered her already lost, but the authorities knew well that the long winter nights were the best opportunity for her to attempt a second running of the Allied blockade.

After the sailing of the *Moewe* and the *Wolf* the Germans tried to send out more ships. These, however, did not meet with the same luck. The *Leopard* started about the middle of March, 1917, and was sunk on March 16, 1917, in a fight with British naval vessels and before leaving the North Sea.

The *Seeadler* finally sailed, apparently on December 22, 1916, and arrived safely in the Atlantic Ocean, where she sank about a dozen Allied vessels. One of the captures, the French bark *Cambronne,* was sent with 300 prisoners to Rio de Janeiro. After these exploits the corsair rounded Cape Horn, entering the Pacific Ocean, where she captured and sank some more ships, among them several American ones. On August 2, 1917, she stranded on the island of Mopeha, Society Islands, and had to be abandoned as a total loss. The captain and a few men sailed in a motor sloop for an unknown destination on August 21, 1917, but were captured near the Fiji Islands. The remainder of the crew captured, on September 5, 1917, the French *Lutèce,* in which they sailed after having equipped her with arms, but were captured too and interned in Chile.

If not much was heard during the war of most of these vessels, especially of the unlucky ones, it is due to the fact that the Germans had no interest whatsoever in publishing their unsuccessfulness. On the contrary, they had the keenest interest in surrounding these operations with mystery, surprise being one of the principal factors of the corsairs' success. The successful vessels, however, after returning to port, were duly celebrated and their deeds exploited for propaganda.

We have stated already that the Germans called their corsairs "auxiliary cruisers," but they have nothing common with this class of vessels as we have known it hitherto. While the auxiliary cruiser of the years before the war was generally a liner with a very characteristic and publicly known silhouette, the corsair had to be a ship as similar as possible to the vessels populating the ocean highways.

To this end the Germans commissioned ordinary cargo boats; for instance, the *Wolf* was the former S.S. *Wachtfels* of the Hansa S.S. Co., of about 445 feet in length and with 5,809 gross tons register. She had a speed of 11.5 knots, rather good for an ordinary cargo vessel of pre-war days, but not too much for the task that was assigned to her.

The *Moewe,* too, was a cargo boat of about the same size or a little smaller.

Interesting is the case of the *Seeadler,* which was the former American bark *Pass of Balmaha* of 1,577 tons, captured in August, 1915, by a British cruiser and captured a second time soon afterwards, with the British prize crew on board, by a German submarine. She was disguised as a Norwegian lumber carrying vessel and was propelled by auxiliary oil engines. All or the major part of her crew spoke perfect Norwegian and this accounts for the fact that she successfully passed the inspection of a British cruiser.

This was the easier as she had forged Norwegian clearance papers. She seems to have been the only corsair for which such a measure was taken, as anyone boarding one of the other vessels would have detected them very easily as corsairs. Thus the *Seeadler* is rather of a class apart and more along the lines of the British *Q* (submarine decoy) vessels.

Of course a good speed would be highly desirable for a corsair, to enable her not only to overtake any vessel met on the high seas, but to run away from enemy cruisers. The issue of a fight with one of them could not be doubtful. The war events have shown it but too clearly. On the other hand, a failure should be avoided in the interest of the operation.

However, merchant vessels of the most ordinary type seldom have a good speed. They will have to be taken not only because of their exterior appearance, but also because there will be no time for a new construction. The commissioning of a corsair is something of an improvisation. It was like this during the late war in the case of the Germans and is likely to be so in any future war. Moreover, to construct a new vessel means seriously to interfere with secrecy, which necessarily must surround the sailing of such a vessel. Finally, a better speed results in a heavier engine and possibly in an increased number of funnels. The first consequence is undesirable because one has not too much displacement to spare in a corsair. The second one seriously impairs the exterior appearance of the ship. It could probably be avoided by the introduction of oil fuel, but we shall see later on that this is not practicable, at least not at present, and not in all cases.

So far as the armament is concerned, it may be said that it is widely varied. Of the *Moewe* an eye witness states that she had four guns and two torpedo tubes forward and three guns aft. The *Wolf* disposed of seven 5.9-inch (150 mm.) guns and four torpedo tubes. The guns of the *Moewe* are likely to have been of the same caliber.

On the other hand the arrangement of the guns of the *Wolf* seems to have been similar to that of the *Moewe*. In any case a few of the *Wolf's* guns and torpedo tubes were mounted in the well. Two guns were placed apparently under the forecastle, near the bow, and hidden by hinged doors of wood or sail cloth. The remainder of the armament was on the quarter deck.

In the well, the guns and torpedo tubes are hidden by the high bulwark and one will only have to take care that no part of them is higher than the rail. On the *Wolf* one of the guns aft was placed near a pair of king posts. Thus the gun barrel could easily be mistaken from afar for a boom, especially as from the muzzle to the top of the king posts were rigged dummy guys and as the breech was covered by an awning.

On the *Seeadler,* the ex-American bark, the two 4-inch guns were hidden under the deck cargo of lumber. From this point of view the disguise as a lumber carrying vessel is very efficient, as these latter generally have large deck cargoes.

For the hiding of the wireless antennæ, too, a sailing ship with her rigging is very desirable. Wireless equipment is one of the essential features of a corsair. However, today these installations are sufficiently common so that their presence on board of an ordinary cargo steamer would not be noted.

The radio is necessary and will have to be of the greatest possible radius in order to intercept the messages of merchant vessels in the neighborhood and to detect the presence of naval vessels. But insofar as the sending of her own messages is concerned the corsair will have to exert the utmost prudence not to disclose her presence. This is the reason why communication with the motherland is not possible. It accounts for the total lack of news from a corsair until she reaches her home port again, as, for instance, in the case of the *Wolf.*

The demand for a powerful radio will call for high masts. Indeed, the necessity to see as far as possible will require the crow's nest to be in as high a position as possible. But on the other hand, a corsair herself must try to hide and in this attempt high masts are a decided disadvantage. Therefore, it may seem best to have telescoping masts, the top masts of which can be lowered, such as many merchant vessels have. The top masts are hoisted only when necessity arises and in this respect it would seem as if a steamer with her simplified rigging is superior to a sailing ship.

When the *Seeadler* stranded on the island of Mopeha the first thing the abandoning crew did was to destroy the tall masts, which could be seen from afar and would have led to the early detection of the vessel and her landed crew.

Better than making use of the radio is an airplane such as the *Wolf* had on board. It served for exploration of the surrounding sea and for scouting, having the advantage of seeing very far from great altitudes, whereas it was very unlikely to be detected.

It scarcely needs to be said that the machine was a hydroairplane, which had to be put on the sea before rising and to be picked up again after landing on the water. Starting from and landing on the vessel herself calls for too elaborate conversions, which, moreover, interfere with the exterior of the ship.

But it is perhaps well to state that the conditions which the flying machine will meet on board of the corsair are rather rough ones and, accordingly, its construction should be as strong as possible.

On page 666 of the issue for March-April, 1916, of the United States Naval Institute PROCEEDINGS is published a photograph of the *Moewe,* which was taken by a British official on the passenger steamer *Appam.* This is the only general view of the corsair which has come to the author's knowledge. It may seem doubtful if the photo referred to is really that of the *Moewe* or of any other corsair at all. This doubt is justified because of the rigging. .At least at the after side of the foremast of the vessel shown, there is no boom, while the distance of the mast from the bridge indicates the presence of the customary hatch. It seems hardly credible, either that originally there was no boom, or that the Germans should have committed the error of removing it. Moreover, both masts of the ship in the photograph have stays to the rear, a practice very common with naval craft but not at all with cargo boats. Would the Germans have neglected such an important item, impairing the successful disguise of the corsair? The masts themselves have a rather pronounced rake aft, again not usual with modern vessels, as it interferes with the swinging of the booms. Finally, the lower mast heads are rather low. Both of these last conditions are not likely to be found in a vessel built in 1914, as we are told that the *Moewe* was.

The above statement will serve to show how careful one must be of the smallest details, which apparently have no importance. In this respect the painting of the vessel is a very important item. The eyes of the merchant skippers are well exercised and too much care cannot be had in fixing the disguise. The paint of the corsairs was frequently altered at sea to deceive passing ships which had been warned before. It must, however, be borne in mind that the paint of a tramp, especially in war times, is generally not a fresh one and one will have to provide for a few "good looking" patches of rust or red lead.

In connection with the painting the name inscription should be mentioned. An eye witness tells us that one of the German corsairs bore no name when she captured the vessel on which the witness was. This seems rather hazardous, as it would immediately arouse the suspicion of passing ships. It would be better

practice to alter frequently at sea the inscription of name and home port, as was done with the British *Q* (submarine decoy) vessels. It ought, however, to be observed that it seems to have been the tactics of the corsairs to avoid coming near any ship not yet captured, as it would have increased the probability of her detection.

If one considers that the corsairs were merchant vessels without a cargo, with the possible exception of the *Seeadler,* one may be inclined to the opinion that they were floating on a lesser draught than their normal load line. This, however, was not the case; at least it was not so when the *Wolf* left her home port.

Of course the armament and its generous supply of ammunition takes up a part of the vessel's deadweight capacity. Besides that, we have to take into consideration the large quantities of supplies for the crew and the considerable amount of fuel that the vessel will necessarily have to take on board.

The crew of a corsair is, of course, much larger than that of the same ship during her merchant career. The *Wolf* had a crew of 350, the *Moewe* of about 200 and the *Seeadler* had some sixty-four to sixty-eight men on board. With a view of the possible weakening of the crew by the detaching of prize crews the number must be rather high.

All this accounted for her being loaded considerably beyond the load line when the *Wolf* left port. It is thus obvious that one will have to exert some care in selecting the equipment of a corsair.

One thing, however, should be provided plentifully: the outfit for the housing and feeding of the prisoners taken on board. In the cases of German corsairs during the late war we have a few instances in which captured ships were not sunk but taken home or sent to a neutral port. But these cases will be an exception and ordinarily the captures must be sunk, as the Germans, in fact, did.

Now it happens not only that the principles of humanity demand the taking on board of the crews of sunken ships, but this is also a military necessity. If left to their fate, floating about in their boats or even on some remote shore, these people may be quickly detected by an enemy naval vessel or by another kind of ship, which takes them to port where they would be able to give precious information about the corsair. This has to be avoided as far as possible and the crews must, therefore, be taken on board.

If many ships are captured there will occur a moment, as it really did with the German corsairs, when the number of prisoners on board becomes prohibitive and they must be evacuated or no more captures can be made. This is the reason why nearly every German corsair tried to get rid of the prisoners from the vessels previously sunk, sending them home or to some neutral port. In this latter case the released vessels had formal orders not to proceed too quickly to destination and the corsair's captain counted very much on the possibility of special measures against him to be taken after the arrival of these prizes in port and the release of the prisoners they were carrying. For the same reason the corsairs' crews were rather vexed in case they had to release a stopped neutral steamer and carefully avoided this possibility.

To come back to the fuel provisions of a corsair leaving port, it need scarcely be said, of course, that as large as they may be, they will never suffice for the whole duration of the cruise. The vessel will necessarily have to rely upon the possibility of capturing fuel at sea.

Now it is surely neither easy nor pleasant to coal at sea out of a tramp or collier, in the best of the cases in a sheltered bay, without any mechanical outfit. Oil fuel would present many advantages in this respect, but for the time being, it would seem as if coal is more readily to be found on the seven seas than is oil, at least in a war against Great Britain. On this account, no doubt, Germany chose coal fired vessels for her corsairs.

The above statement seems to disagree with what has been said of the large amount of fuel taken on board when leaving the home port, but in reality it is not so. This amount will vary with the geographical and strategical position of the country sending out the corsair. She will have to have enough fuel to run through the blockade and to reach some more distant ocean highway, where it will be possible for her to exert her profession in an unmolested manner and where she will likely find fuel to capture. From this point of view the position of the German ports was not among the most favorable.

To conclude, we may mention that a corsair, although being a merchant vessel, will have to conform to certain features of the design of men-of-war. Thus the provisions for the preventing of any light being seen at night from outside will have to be as

elaborate as on board a vessel of war. The sick bay will have to be more spacious than formerly in her merchant career. Not only is the crew more numerous and one must take into consideration the possibility of a fight, meaning wounded, but the numerous prisoners too are liable to give their share of sick.

Very important is the carrying by the corsair of tools and materiel for making as large repairs as possible. The necessity of such will always occur and, naturally, there is no chance for help from the shore.

Cleaning of boilers and the upkeep of the engines play probably a more important rôle in the life of a corsair, which must be prepared at any moment to give her best speed, than in that of any other steamship. Moreover, these operations will often have to be carried out at sea, a deserted anchorage not being always available. From this point of view a sailing ship would show a marked advantage over a steamer.

The author has neither the intention nor the opportunity of exhausting the subject of corsairs. He simply wants to draw the attention of the readers to operations, the possibility of which arose during the late war with its particular naval situation. Not only are these operations not devoid of interest and illustrative of some very fine performances of seamanship, but the possibility of their renewal may occur again with a similar situation of the belligerents.

DISCUSSION

The Rough Log

By Captain Felix Riesenberg

Editor's Note:. Through the courtesy of the *Nautical Gazette*, the following is reprinted from the issue of May 2, 1925. The author, Captain Felix Riesenberg, is associate editor of the *Nautical Gazette*, and conducts "The Rough Log" of that magazine.

Another Controversy

It is a dangerous thing to print anything nowadays that contains more than one tenth of one per cent of real criticism. The safe thing to do seems to be a continual paean of praise of everything under the sun that sends out pay checks with regularity and pays its dividends when convenient.

Recently this Rough Log suggested that sea training on ships at sea would be a splendid thing for youngsters with an ambition to some day become naval officers on Uncle Sam's ships. Of course they do get sea training on ships at sea, when not on the firm foundation of Severn Bank in those beautiful and substantial buildings. The thought that perhaps this relationship between the time ashore and the time at sea was all wrong is where the rub comes in. If some people are clever enough to make seamen ashore, well and good. If seamanship has gone out of fashion and something much more scientific and complicated has come along to take its place, also well and good.

Not very long ago I was visiting a sailor admiral in the great cabin on a United States battleship and discussing these very things. This admiral is a square-rigged sailor, a man of extraordinary personal force and character. He is one of the last of the square-rigged breed of sailors who have brought our fighting ships to their present size and force. I know him, have been at sea with him as a boy, when he was a watch officer of a ship-rigged schoolship, and have seen him in the constant emergencies of the sailing ship.

It is his belief that a youngster of superior intelligence, given an initial start in sail, forms habits of quickness and observation, and command over himself and of men, such as he could get nowhere else. This admiral is a rare old seaman. A fighting ship is a hard packet, according to his ideas. Once during the early months of the World War, when he was still a captain, he was informed that a little party was to be held on his ship—tea and everything, you know. Oh yes, the President and his lady were coming on board with a few friends.

"Not on my ship," he said. "Not while I'm captain of her. My people understand we are at war now, and I've stopped all parties on the ——."

The party was not held on that particular ship.

Think of the opportunity he missed! Standing near the President, movies perhaps, and later on a medal when the honors were being distributed. But

this sailor is one of the old school; they all step around pretty lively when he's on board, and he's on board all the time.

Imagine my pleasant surprise when I picked up the April number of the PROCEEDINGS of the U. S. Naval Institute and read a discussion therein of a previous paper by Ensign Folk. The comment, by Brockholst Livingston, on the paper, "Basic Education of Officers," February, 1925, PROCEEDINGS, is of interest here. He writes, in part: "Ensign Folk . . . . has called to the attention of the readers of his article the fact that somewhere there is a deficiency in the training of men to be officers of the United States Navy. He does not offer to locate definitely that lack, but he sets forth a 'panacea.'"

The article is mainly a discussion of the things to learn out of books. Ensign Folk believes in the classics, etc. Before we go on to his next suggestion, let us quote again: "At the present moment there is one question among many which is causing great concern to the authorities. That perplexity is the number of resignations among the officer personnel of the navy. 'Unrest,' says Ensign Folk, 'impairs efficiency.' This is true. He then adds: 'Somewhere along the way in the training of officers there has been failure in instilling in their hearts a true love of service.' This is offered by him as an excuse for the resignations and unrest. Does he, or do the 'powers-that-be' realize the seriousness that threatens to shrink the navy to the danger point? Ensign Folk has written his article. It has appeared in print. Shall the matter rest here? Cannot something be done to remedy this failure which impairs the efficiency and endangers the naval service?"

Strong words, mate, and in the PROCEEDINGS, too. One thing about these Johnnies, they speak right out in meeting.

Now for his second suggestion, *"A preparatory naval academy."*

Our humble idea is that the above preparatory course should be a compulsory one, *previous* to admission to the shore-schooling, and should be spent on board a cruising ship *at sea*, at least six solid months of it under canvas. The entrance age to be not more than sixteen. Dress the business up with every shred of romance and tradition the thing affords. Salt the youngster's blood, make him do his time before the mast, as of old, a real "snottie" in the steerage at sea. After that he will be so filled with ships and seas and seamanship and other nonsense he will see the thing through to the glorious end, when he is rowed ashore from his ship in the admiral's barge, ten four-stripers pulling at the oars.

In a system like this the mortality would be in the preparatory end. Perhaps two thirds of the ambitious ones would quit the cruising ships every time they came within sight of home ports. The cake-eater would never get as far as Annapolis.

Men don't go to sea for money or for a good home; they go because they are out for action and like the life. The potential money-makers go into stock broking or real estate and are willing to be chained to desks for years and punch time clocks.

Our "powers-that-be" might look over the Royal Navy and take a few tips. Name the ships so the youngsters will thrill with pride. We have plenty of great names. Think of a battleship named *Mississippi!* About as soul-inspiring as a dish of boiled parsnips. Don't be afraid to let people know that Uncle Sam's ships have licked the other fellow. When the Prince of Wales embarked upon the battle cruiser *Repulse* the pictures in the rotogravure show her conning tower plastered with the names of famous British sea victories. Cadiz, 1596; Azores, 1597; Martinique, etc., etc., the other names not being entirely distinguishable. Brash stuff, we call it, but the thing that fills boys with pride and keeps them at sea. Also, let the lads have their prize money; they will always have to earn it, even if they can't have their grog.

Basic Education of Officers

(See page 274, February, 1925, PROCEEDINGS)

LIEUTENANT H. A. ROCHESTER, U. S. NAVY.—The letter of John Paul Jones to the provisional marine committee of Congress in 1775,* wherein he gives his conception of the qualities essential to an able officer, has served as an inspiration to many recent articles on naval leadership, and to various suggestions for revision of the Naval Academy curriculum. I am afraid that I cannot subscribe to the use of this letter in advocating the extension and revision of the Naval Academy course, in order to produce the type of officer laid down by Jones. I also cannot subscribe ensemble to the acceptance of this letter in papers on leadership without certain limitations or interpretations to present day usage.

An advocate of a six-year course for the Naval Academy suggests such a change in order to produce officers of the caliber and standard set down in the aforementioned letter. He would have the graduate more liberally educated and would include in the Naval Academy course more literature, language, political economy, logic, psychology and kindred subjects. He, too, would lessen the daily lessons and cramming by stopping all classes and drills by 4:00 P.M., so that the midshipman might have more time for recreation and athletics. By giving the midshipman more time for finding his soul, and with other readjustments of the course, the graduate would more closely approach the ideals laid down by John Paul Jones.

These suggestions appear theoretically sound. In reviewing Jones' victories and honors in later years in the varied fields of naval warfare, diplomacy, business and in the social world, one would naturally expect him to have had an excellent scholastic training. But an incongruity lies in the fact that all the meager schooling John Paul Jones, himself, received, was in an ill-equipped Scotch parish school. The truth is that at the tender age of twelve he left school and went to sea, indentured as a master's apprentice. Not only that, but he actively spent the years until he was twenty-seven in the Merchant Marine. When he left the sea to become a Virginia

* EDITOR'S NOTE—See Naval Institute PROCEEDINGS, No. 133, March, 1910.

planter, Captain Paul, as he was then known, had a number of years of successful command behind him. Do you think that he lolled about those fifteen years laying the keel of his character and knowledge on which he later constructed his historically famed exploits? No. He self-educated himself. He constantly strove to improve himself not only in the art of seamanship, but also in French, Spanish, history, literature, and not the least, the social graces.

He had no prescribed course of study laid out for him. No incentive to get a 2.5, or to increase his scholastic standing, no libraries or laboratories close at hand, no gymnasium or athletic fields, no class lectures to satisfy his avid longing for knowledge, no counselors to direct, guide and stimulate his efforts. The early period of his life was far from being devoted exclusively to his education. His environment aboard ship was hardly that to encourage his endeavors for self improvement. The routine ship's work, though from other indications he did much more than perform this work in a perfunctory manner, alone might well have kept him occupied. In those days education was not so prevalent. Books had a smaller proportional circulation and colleges and universities did not offer the extension courses that are available today. These certainly were handicaps to test the perseverance of many, but not of Jones. Despite the lack of time and other adverse conditions, he not only assiduously self-educated himself, but at the age of twenty-one, we find him master and supercargo of a full rigged ship in trans-oceanic trade.

Another advocates a governmental preparatory or secondary school for the Naval Academy, making a successful completion of the course of the former a necessary requirement for entrance to the latter. He seems to believe that this increased training will turn out a better, finer man than the new ensign of today. For one thing he confuses the external veneer of a preparatory or college student with culture. Culture, as I understand it, is an appreciation of quality and nicety of perception and taste, not a matter of quantity. But I digress. The student in the lower school would be sheltered from the coarser contacts of life and from the unelevating influence (but tempering to the fine steel of true character) of any undesirable associates with whom he might otherwise be thrown. Would that be the proper training for handling men—especially the younger enlisted men with an exuberance of pure animal spirits? I believe the student's viewpoint instead of broadening would narrow.

The excerpt from John Paul Jones' oft noted letter, "He should, as well, be a gentleman of liberal education . . . . both with tongue and pen he should be versed in French and Spanish . . . ." is used as an argument for lengthening and making the Naval Academy course more liberal. The inconsistency in using the ideals of a man of little schooling as a point for increasing scholastic training is apparent. Had Jones lamented his lack of organized education, the case would be different. I have found no mention of such a plaint. Again, this lower school is advocated in order to produce finer, more cultured graduates. This culture is to be obtained to a degree

by the removal of contact with "the leader of the gang which loafs around the corner drug store," to quote the writer's words. In what retreat, I ask, did John Paul Jones lead an undisturbed cloistered existence while he was enlightening his mind and strengthening his moral traits? He did it while serving on blue water. At the age of twenty-one, he was actually engaged in the African-West Indian slave trade, scarcely a medium through which to refine one's taste and improve one's intellectual tendencies.

The primary object of the Naval Academy, to develop embryo officers, "practical rather than academic," seems to be overlooked in these suggestions. The midshipman's education is but a preliminary training by means of a prescribed course of study, whereby the student acquires certain knowledge, more or less theoretical, for later application to practical usage at sea. The naval officer's career is essentially that of a man of action—the operation of guns, machinery and ships. The average prospective midshipman chooses the Naval Academy, though he may not have analyzed the actuating motives to this day, because he is of a scientific or mechanical bent. To attempt to broaden a man by enforcing a liberal education would in itself defeat the ends of a cultural influence. The latter is acquired by an assimilation, not by an injection, process. Though the pure scientific and cultural subjects, in contrast to those of applied science, are desirable, they are secondary to the main issue. They should be left, as they are at present, to be acquired mainly by the effort of the individual and at his own discretion.

Articles on leadership, too, often quote this letter, using the qualifications for a naval officer as laid down by Jones as an outline. Undoubtedly, portions of this letter concisely embody the generally accepted principles of leadership. However, it seems that the excerpt, "He should not only be able to express himself clearly and with force in his own language both with tongue and pen, but he should also be versed in French and Spanish . . . ." too often has been given undue and more relative importance than it deserves. This quotation is unfair and misleading in that it is but the first half of a sentence. The second half of the sentence gives the reasons for making these recommendations and is as follows: ". . . . for an American officer, particularly the former—for our relations with France must necessarily soon become exceedingly close in view of the mutual hostility of the two countries toward Great Britain." Jones, then, in reality, recommends the learning of the French language on the possibility of becoming an ally of France and not for its purely cultural influence.

One hundred fifty years ago, French was the common language for intercourse of nations of different tongues. On foreign stations, too, it would take a ship weeks and even months to get in touch with the authorities at home, and it behooved the naval officer to be minutely acquainted with international and diplomatic affairs. As a case in point, Jones showed an enviable record and came off the victor in his diplomatic duel with the British minister at Texel. However, conditions have changed today. English has replaced French as the universal language. The rapid means of com-

munication with the State and Navy Departments by radio and ocean cable has, more than ever, made the naval officer primarily a man of action.

In advocating the modeling of a naval officer according to the standard laid down by Jones, the fact has not been discounted that all temperaments and natures are not so plastic as to be converted, and that the same success may be achieved with other methods. Jones, a man of intense and restless temperament, not satisfied with the limiting ranges of a merchant captain's life, assiduously perfected himself in the social graces. From historical anecdotes it is gleaned that he could arch his eyebrows at innuendoes as deftly, and make as consummate a bow as an Arliss or a Menjou. As his continental career shows, he was a born courtier, and he could make pretty speeches in their native tongue, fluently and with correct accent, to the ladies of at least three lands. Compare the homely phraseology and the ruggedness of Farragut. The latter was not the less successful because he developed and emphasized his own inherent characteristics instead of attempting to conform to precepts that were foreign to his nature.

John Paul Jones, too, did not properly regulate his life and habits. He was exceedingly extravagant of his mental powers, and did not successfully control the intensity of his nature. He kept no reserve and the consequent drain on his physical system was reflected by the life-long pallor of his features. Napoleon, looking about for an admiral to place in command of the remnants of his fleet after Trafalgar, inquired as to John Paul Jones' age at his death. On being informed that Jones died at the age of forty-five, Napoleon exclaimed, "Then he did not fulfill his destiny." His body burned up and spent beyond resuscitation of medical science. Jones died of a complication of ailments, nineteen years before the present age limit for retirement. There are many exhortations in essays on leadership to stimulate, but very few to conserve, one's energies.

Much can be learned from the career of John Paul Jones. His letter to the marine committee has been misquoted often, and to my idea, misapplied. The victories and honors of his life prove the efficacy of self education rather than that of scholastic training. Many of his exploits have become colored in the elapsing century and a quarter, and a perspective of his life, instead of acumination with the passing years, has become myopic in a haze of romanticism. A warning should be issued to others that the abrupt termination of his mortal cruise was caused by his own prodigal shaping of the course on which he chose to steer through life. Lastly, should any one of the foregoing views appear in any way to be disloyal to the memory of one of our, rightly, most cherished naval heroes, the whole is offered in all humility.

Basic Education of Officers

(See page 274, February, 1925, PROCEEDINGS)

F. E. BUNTS, M.D.—A recent article in the February number of the Naval Institute PROCEEDINGS entitled "Basic Education of Officers" by Ensign Winston Folk, U.S.N., has attracted my attention. One must accept the

sincerity of the author's statement that whatever the opinion of others, the opinions which he sets forth are "for the good of the service."

Recently, when I commented to the superintendent of the Naval Academy upon what I considered the evidence of vandalism in some of the present generation of midshipmen, in painting the guns, shells and torpedoes, and decorating the figurehead of the old *Constitution* with daubs of red and white, facetiously and childishly decorating *Tecumseh*, and painting the hull of the famous old yacht *America* and the roof of their "Granite Gray Mother by the Severn Side" with the legend "Beat the Army," in order to cheer them on to victory in a coming football game, I was reminded that things had changed since he and I were students at the Naval Academy.

Surely they have, whether for the better or worse I do not know, but I cannot help but think that the fundamental purpose of our educational program was understood as well or possibly better then than it is now. It was to fit us to protect our country from invasion, to seek and destroy the enemy's fleet and to render such aid as might be needed in any circumstance to American citizens and to American shipping. That is what our country expects of us; that is why the costly and unequaled institution at Annapolis is maintained by the people of the United States. If by chance we were to be called upon for other service, diplomatic or otherwise, such service would be rendered with all the ability and devotion to our country of which we were capable.

Education is a relative term—so is culture—and I believe, it never occurred to us that we could ever be considered inferior to the officers of any other nation. Latin and Greek, even today, are not required in many of our colleges. That English officers know more about our country than our own officers, I do not believe and if it be so it is a serious reflection upon the ideals and ambitions of the latter. A little more time in the Naval Academy library, a little more collateral reading during their course in history and the constitution of the United States, perhaps a little less time for football, might place them on a plane of equality in this respect with the English officers.

A real liberal education in my opinion, cannot be acquired at school. The ability to study and to comprehend, the desire for wider knowledge, can be implanted and grow to full fruition if the mind prove a fertile soil, but if it be sterile no amount of coaxing will make it what we could wish. Argument *ad absurdum* is never convincing and seldom wise and to talk of a graduate of the Naval Academy as knowing so little of French and Spanish that his knowledge of foreign languages is exemplified by such phrases as "Polly voo fronsey" and "Hey, hombre! Come here Pronto," or as one who thinks "Shakespeare a medieval weapon" is to reduce argument to its most absurd form. Paul Jones knew how to fight. If, in addition, he had the advantage of speaking fluently in other languages than English it was acquired elsewhere than in a naval school; and if he had culture it added nothing to the estimation in which the English held him, for they would willingly have hung him from the yardarm as a pirate.

One cannot help but think that one who feels that American naval officers represent the élite of their country around the world and are found wanting when weighed in the balance against foreign officers in the matter of culture must be a little "ratey," whatever that may mean, and does not quite realize that what the American people desire of them is that they shall be gentlemen and naval officers so skilled in their profession and so cognizant of their duties as such that they can if necessary look the officers or sailors of any other nation in the world in the eye and calmly tell them to "go to hell!"

As for the system of education proposed in the article referred to, it might be ideal if it could be carried out but in a democratic nation like ours, few of the "élite" would be found who would give up their children at such an early age to enter a profession for which they might not eventually be fitted, either by taste or circumstances.

Basic Education of Officers

(See p. 274, February, 1925, PROCEEDINGS)

COMMANDER J. T. BOWERS, U. S. NAVY.—It seems to me that this article is deserving of discussion, not so much on account of the criticism, as on account of the point of view and the insight of the writer.

The curriculum of the Naval Avademy is designed to give precisely what the title of the article states: viz., a *basic* education.

On the surface it may well appear that, since the graduate of the Naval Academy is the one most interested, from a personal standpoint, in the education given there, he is entitled to free criticism. No opposition to such criticism is offered, but I would caution all critics first to look behind the scenes and learn something of the conditions and difficulties that must be met by the "powers-that-be."

The most important thing to consider is the fact that we must meet the requirements of our board of directors, which is the Congress. This at once brings us face to face with entrance requirements. Within the past few years the entrance requirements have been raised from a grammar school level to the high school level. It is now possible for every boy in the country to get a high school education in a public school by the time he is eighteen or nineteen years of age, but the point to which high schools bring their pupils in the fundamentals is far from uniform. The majority in the country are excellent, but when the suggestion comes up to set our standard to the higher level of the majority, thereby forcing the more backward schools to come up to standard, we find that we are touching on very delicate and sensitive nerves.

It is quite true that most states have state colleges open to their citizens without tuition. But a young man must pay for his board, lodging, clothing and books, and to set two years or more of college as the entrance standard would exclude those unable to defray the incidental expenses.

As to "junior naval academies," he would, indeed, be a wonder who could convince our board of directors, the Congress, that money appropriated for this purpose was honestly for the good of the country, and not to create a large number of desirable shore billets for more officers.

So much for educational requirements for entry.

In considering the breadth of the Naval Academy curriculum, it should be borne in mind that this very aspect of it has been receiving the most serious study and careful development *from the inside,* by scores of officers during many years. My only reason for touching on this is the fact that the appearance of this article seems to indicate the possibility of an impression in the minds of more or less recent graduates that this phase of the situation has been overlooked.

One more important point is this: The author of the article seems to make the same mistake that is so generally made in discussing the adequacy of the curriculum of the Naval Academy. It should never be forgotten that neither the Naval Academy, nor any other college or university, can possibly turn out a finished product in education. When a man graduates from any school he has received from the school only the foundation on which to build his real education. The breadth, the completeness of the education he has by the time he is forty depends entirely upon the constructive work he has put on it since the foundation was laid for him in his school. Furthermore, the solidity of the foundation laid in the school depends very directly upon the amount of effort he himself put into the construction of it. Unfortunately, many realize this too late.

It is only after long study on how to piece together the irregularly shaped components into a smooth and fairly complete whole that any man can appreciate the difficulties to be met, surmounted, adjusted and reconciled. If one could have a free hand in selecting one's conditions for this work, including time available, wonderful results could be achieved, no doubt. But the problem is to turn out a creditable work with given conditions; a very different proposition.

Suggestions for Naval Reserve Training

(See page 1786, November, 1924, PROCEEDINGS)

LIEUTENANT G. W. AKERS, U. S. N. R. F.—Some months ago an article by Lieutenant Commander E. S. R. Brandt contained some extremely valuable suggestions for naval reserve training. The principle set forth by that article, that of training reservists for some specific duty, deserves much support and this writer wishes to make a few suggestions as to how that principle can be made to apply to reserve engineer officers.

It must constantly be borne in mind, however, and indelibly impressed upon each reservist that, while he is specializing upon some particular prospective job, he must keep up with the fundamentals of his profession as applied to any job his rank or rate may call for.

When a man enters a technical college to study engineering he must spend nearly two years upon fundamentals before he starts to specialize. In most schools the course for the first two years is practically identical for civil, mechanical, electrical and the other branches of engineering. In the same way, once a reserve engineer officer has learned the fundamentals, and he should have learned them by the time he becomes an ensign, he should thereafter be trained for some specific duty.

The writer has cruised the last two years, and faces the prospect of cruising each year for some time to come, on the same ship, a gunboat built in 1904. While a certain amount of training in divisional duties, discipline, etc., is obtained each year, it is extremely difficult for him to see how his value as an engineer officer is being enhanced by continual cruising on a ship with an obsolete and fairly simple power plant. He has wondered how he would "get by" if, in an emergency, he were suddenly ordered to a modern oil burning and turbine installation when his last actual experience aboard a modern ship was over six years ago. Doubtless many other engineer officers in the reserve feel the same way.

If, however, for example, the policy was decided upon to train reserve officers to run, during an emergency, the power plants of the many destroyers now out of commission, could not enough officers be trained sufficiently to do this?

During such a time the important thing is that the ship "get there and get back" and not that it should hang up any engineering records for efficiency. What a relief it would be to the Navy Department to be able to order Lieutenant John Doe to a destroyer as engineer officer and be fairly certain that he could put the ship's machinery in commission and keep it running.

As the fundamental layout of the machinery of our destroyers is almost standard, a correspondence course could be devised by the Bureau of Engineering similar to the courses now issued by the Naval War College. This would put into the hands of the reserve officer the main data regarding the layout, operation and maintenance of these plants. If, coupled with this course, the officer were given the opportunity of making his annual fifteen-day cruise on a destroyer in the regular service under the instruction of the regular engineer officer, it would not be long before there would be available a considerable number of capable engineer officers for destroyers.

These officers, in addition, would probably after their first cruise be competent to instruct the enlisted men in the engineer divisions of the reserve in destroyer duties.

This discussion is written with reference to destroyers because the writer believes that these ships would have to be immediately mobilized in an emergency. The idea of training reservists for specific duties could be extended, however, to many other specialist jobs that must almost immediately be filled at the mobilization of the Reserve Force.

Rohrbach All-metal Flying Boat Afloat With Sails Set

ROHRBACH ALL-METAL FLYING BOAT AFLOAT WITH SAILS SET

PROFESSIONAL NOTES

PREPARED BY

LIEUTENANT COMMANDER H. W. UNDERWOOD, U. S. NAVY

FROM MARCH 23 TO MAY 7

GENERAL ARRANGEMENT

NOTES ON THE DARDANELLES CAMPAIGN 1027
GREAT BRITAIN 1056
FRANCE 1066
GERMANY 1068
JAPAN 1070
UNITED STATES 1072
AVIATION 1076
MERCHANT MARINE 1078
CURRENT NAVAL AND PROFESSIONAL PAPERS 1084

NOTES ON THE DARDANELLES CAMPAIGN OF 1915

EDITOR'S NOTE: Reprinted from the *Coast Artillery Journal* by special permission of the Editor and the author, Major Miles. Only that portion is reprinted which refers to the part taken by the Royal Navy in the combined naval and land operations.

By Major Sherman Miles, G. S.—FOREWORD.—Thanks to the kindness of Admiral Mark L. Bristol, U. S. Navy, I have been able to make four trips to the Gallipoli battlefields, twice under British and twice under Turkish guidance. I have also received from the Turkish General Staff both published and unpublished information on the disposition and strength of their troops at certain critical periods of the campaign, and from the historical section of the British General Staff similar data on their troops. I am greatly indebted to General Sir Ian Hamilton for copious comments, which I have used in revising my manuscript and as footnotes.

These sources of information, and a study of the standard books on the campaign are the basis, and must also serve as the excuse for the following notes.

They are notes on what appear to be the salient points of the campaign, and are in no way intended to present even a condensed story of that long and tragic struggle.

GENESIS

In the genesis of a campaign often lies the secret of its revelations.

The Dardanelles Campaign seems to have been conceived in the brain of Winston Churchill, first lord of the Admiralty. At least he was its principal advocate. Essentially the idea was to use Allied sea power to turn the southern flank of the Central Powers, to cut Turkey out of the war, to open up direct communications with Russia, to strengthen the Alliance by exchanging western munitions for Russian grain, to line up Italy and the

Balkans on the Allied side, to keep the Near East and India quiet, and to tighten the blockade of the Central Powers.[1]

As a strategic conception it is hardly open to criticism. Slavish insistence on the principle of the objective might have condemned it, seeing that the German Army and high sea fleet were unquestionably the enemy's main forces. But by the winter of 1914-15 the German Army was securely entrenched in northern France and Belgium, and the high sea fleet lay in impregnable harbors. The Western Allies could get at neither the one nor the other. As events turned out, the German position was so strong that the initiative in decisive action rested with them, both by land and by sea, for over three years to come. But, though the Western Allies could decisively defeat neither of the enemy's main forces, their eventual ability to do so depended largely on the pressure which Russia could bring on the eastern front, and that in turn on the supply of munitions to Russia. This was not widely realized at the time, and Russian grain loomed larger in western eyes than her increasing need for munitions; but that does not affect the strategic value of the opening of the Dardanelles. Its value was greater than was then realized.

The Western Allies held in their hands a surplus power at sea, and some available troops, which meant that they could move rapidly and with a certain amount of secrecy to any coastal zone in enemy territory and there land troops in combined operation with their warships. For the time being application of the first principle of war, that of the objective, was denied them; but, thanks to their sea power, they still held in their hands possibilities of the offensive, of maneuver, of cooperation, of surprise and of security. These they attempted to apply in the Dardanelles Campaign; and, in view of the strategic situation and possibilities at that time, it may be contended that the campaign also conformed to the broadest conception of the principles of economy of forces and of simplicity of movement. If ever "a way around" was justified in the strategic field, that way lay through the Dardanelles early in 1915.

(See map opposite page 1056.)

* * * * *

The earliest discussions on the Dardanelles idea occurred in the month of September, and again in November, 1914. They came to nothing. On November 3, three days after Turkey declared war, Admiral Carden, commanding the fleet off the Dardanelles, bombarded, by direction of the Admiralty, the outer forts at the Dardanelles. That also amounted to nothing, except as a preliminary warning to the Turks.

On January 2, 1915, writes Winston Churchill, "Lord Kitchener came over himself to see me at the Admiralty, and we had a full discussion." Russia had appealed to her Western Allies for some action against the Turks. "He (Kitchener) returned steadily and decisively to the statement that he had no troops to spare, and could not face large new expansion of our military commitments." That put the army out of it.

Nevertheless, on the following day, the British War Office cabled the Russian Government that a demonstration would be made against Turkey. But Mr. Churchill thought little of demonstrations. He promptly cabled Admiral Carden: "Do you consider the forcing of the Dardanelles by ships alone a practical operation? It is assumed older battleships fitted with mine-bumpers would be used, preceded by colliers or other merchant craft as mine-bumpers and sweepers. Importance of results would justify severe loss." The admiral submitted a plan by cable, which was approved on January 13 by the War Council, on which Lord Kitchener sat. Again I

[1] Note by General Hamilton: "An excellent and comprehensive summary."

quote Mr. Churchill: "The decision of the council was unanimous, and was recorded in the following curious form—'That the Admiralty should also prepare for a naval expedition in February to bombard and take the Gallipoli Peninsula, with Constantinople as its objective.'"

"A naval expedition" to "take the Gallipoli Peninsula," a rugged stretch of land twelve miles by forty-seven! And in the Carden plan, which was one of progressive reduction of the Turkish defenses ("might do it all in a month, about," thought the Admiral), there is no mention of troops, even for subsidiary purposes!

The decision of January 13 was confirmed on the twenty-eighth by the same council, this time in spite of the obvious dissent of Admiral Fisher, the first sea lord. "Lord Kitchener considered the naval attack to be vitally important," runs the record of the council. "If successful, its effect would be equivalent to a successful campaign fought with the new armies. One merit of the scheme was that, if satisfactory progress was not made, the attack could be broken off." Up to this point it was a purely naval project, and of limited commitment.

Here at the outset were two very questionable doctrines. Ships have successfully run by coast defenses, notably in our Civil War, and many naval authorities were not prepared to admit that it could not be done again. But deliberate and progressive reduction of heavy land batteries and minefields is quite a different matter. To engage ships against forts in open fight in narrow waters is a procedure which had been condemned by the highest naval opinion for a generation. Yet in this case the admiral proposed to reduce the Dardanelles' defenses with a force of three modern battle cruisers and twelve old battleships, and the sea lords at the Admiralty, giving him a dreadnaught and two pre-dreadnaughts in lieu of two battle cruisers, approved his plan. "No one," writes Winston Churchill, " . . . . said, 'This is absurd. Ships cannot fight forts.'"

As to the theory of limited commitment, it is obvious that that is not the basis on which so important an operation should rest. Half-hearted measures would but lead to disaster, as the British were soon to realize.

On the eve of the naval attack the Admiralty had qualms of doubt about the Carden plan. Later on, most of the naval authorities testified that they had been opposed from the first to an attack by warships alone. Not until February 15, however, over a month after the naval attack had been authorized, did the Admiralty put in a strong plea for land forces. "The naval bombardment," says its memorandum of that date, "is not a sound military operation unless a strong military force is ready to assist in the operations, or at least, to follow up immediately the forts are silenced."

The next day, February 16, it was decided to send the 29th Division from England to Lemnos, and "a force from Egypt if required." These troops were "to be available in case of necessity to support the naval attack on the Dardanelles"—which began three days later. This was a critical decision, and for the first time clearly envisaged the use of a considerable land force. But, says Winston Churchill, "when we met in council again on the nineteenth, it became clear that Lord Kitchener had changed his mind. He informed us that he could not consent to the despatch of the 29th Division to the East." Churchill pleaded for it in vain. Kitchener was not to be moved—he was then not only field marshal and secretary of state for war, but virtually commander-in-chief and general staff as well.

On February 25 Admiral Carden suggested that 10,000 men be landed on the tip of the Gallipoli Peninsula at once, but he was given to understand that he was to force the Straits without military assistance. Nevertheless, the theory of limited commitment, the idea of withdrawing if the naval attack proved unsuccessful, seems to have been abandoned about this time.

Two more weeks pass. The naval attack continues. "On March 10 Lord Kitchener . . . . announced to the War Council that 'he felt that the situation was now sufficiently secure to justify the despatch of the 29th Division.'" From that moment the land attack became a practical certainty, although it was not definitely decided on until March 22, in the cabin of the *Queen Elizabeth*. The arrival of General Hamilton at the Dardanelles happened to coincide with the disastrous naval attack of March 18, in which the Allies lost three capital ships sunk and three badly damaged. That finally tipped the scales. The navy fell back in support; the army took up the fight.

"We drifted into the big military attack," says General Callwell, the director of military operations. "Drifted" just about describes it. Fifty-eight days elapsed between the decision of the War Council to attack with the fleet alone and the assignment of General Hamilton as commander-in-chief of the expeditionary force. Those fifty-eight days of hesitation correspond very closely to the period of sixty-five days which elapsed between the beginning of the naval attack and the landing of the troops. They measure the lack of synchronism in the combined operations and the period of definite warning given the enemy.

Nor were the British content to warn their enemy by naval attack alone. They actually landed or threatened to land troops long before the army was put ashore on April 25. Demolition parties were landed near the outer forts on February 26 and 27, March 1, 3 and 4. "Instead of being planned as a surprise—the essence of a sea attack—the campaign had been heralded as few have ever been," says the historian of the Australians. "No condition designed to proclaim it seems to have been omitted."

* * * *

Now let us turn to General Hamilton's diary. He is writing on March 14. "Neither the Asquith banquet, nor the talk at the Admiralty that midnight had persuaded me that I was going to do what I am actually doing at this moment. K. (Kitchener) had made no sign nor waved his magic baton. So I just kept as cool as I could and had a good sleep. Next morning, that is, the twelfth instant, I was working at the Horse Guards when, about 10.00 A. M., K. sent for me. I wondered! Opening the door I bade him good morning and walked up to his desk where he went on writing like a graven image. After a moment, he looked up and said in a matter-of-fact tone, 'We are sending a military force to support the fleet now at the Dardanelles, and you are to have command.' . . . . Although I had met K. almost every day during the past six months, and although he had twice hinted that I might be sent to Salonika, never once, to the best of my recollection, had he mentioned the word Dardanelles. . . . . Wolfe Murray, the chief of the Imperial General Staff, was then called in, also Archie Murray, inspector of home forces, and Braithwaite. This was the first (apparently) that either of the Murrays had heard of the project!!!" The next day General Hamilton left England for the Dardanelles.[2]

"In the beginning was the Word. . . . ." The Omnipotent may thus create: but we poor mortals must study and plan beforehand if we would bring success to our enterprises, especially in the matter of military expeditions overseas.

The Dardanelles military expedition ran true to form. Created offhand by the word of Lord Kitchener, it continued to the end on the hit-or-miss

[2] Note by General Hamilton: "The very moment the mere possibility of a landing was envisaged I should have been sent post haste to the scene to work out plans and advise. Of all the lessons of how not to do it, K.'s way of fixing up the chief command was the worst. Lincoln's positively shines by comparison. I was selected (I have reason now to believe) some time previously, but was not so informed."

principle. The first transports came in with their loads in hopeless confusion. Guns and shells were always wanted, never received systematically or in adequate quantities. New divisions were sent out below war strength, while the seasoned units dwindled away for lack of replacements. The base at Alexandria remained under a general coequal in authority with Hamilton, and intent on his own Egyptian show. The whole service of supply was a constant source of worry. The expedition remained to the end an illegitimate child, importunate in its demands and annoying by the very fact of its existence.[3]

* * * *

The genesis of the campaign, from the Turkish side, was hardly more promising. Not until the naval attack had demolished the outer defenses of the Dardanelles, late in February, were the two Turkish divisions at the Dardanelles, the 7th and 9th, reinforced by two more divisions. Up to February 25, says a Turkish General Staff report on the campaign, "it would have been possible to land successfully at any point on the Peninsula, and the capture of the Straits by land operations would have been a relatively easy affair."

"At the end of February," General Liman von Sanders writes, "Turkish G. H. Q. firmly believed in the possibility of forcing of the Straits by the enemy fleet. Everything had been prepared for the departure of the Sultan, his court and his harem, as well as the civil and military authorities. . . . . The military measures which G. H. Q. drew up between February 29 and March 1 would have been fatal. . . . . They prescribed that, in case the Straits were forced by the enemy fleet, the 1st Army should have the mission of defending the north side, and the 2nd Army the south side of the Straits and the Sea of Marmora. . . . . As to a defense of the outer shores of the Gallipoli Peninsula, bordered by abrupt heights, and of the shore of the Asiatic side of the entrance of the Dardanelles, this was simply renounced." On March 1 the 2nd Army Corps at Adrianople and the 4th Army Corps on the Panderma-Balikesri Railroad were ordered in toward Constantinople. "It was precisely the 2nd and 4th Corps which constituted the large units nearest the Dardanelles, those which would have been first called on in case the enemy debarked." General Liman protested to the German Ambassador and to the chief of the Military Cabinet of the German Emperor, and the troops were not moved.

Meanwhile the Allied naval attacks, begun on February 19, continued, and "information became more clear on the formation of a powerful expeditionary corps with a view of debarkation."

On March 24, six days after the great naval attack (which proved to be the last), "Enver Pasha at last decided to form a special army, the 5th, for the protection of the Dardanelles. . . . . Late in the afternoon of March 24 Enver telephoned me to ask me to remain in my office until he came. He arrived shortly afterwards and asked me if I were disposed to take command of the 5th Army newly constituted at the Dardanelles. I accepted immediately, but I told him that he had not an instant to lose in reinforcing as rapidly as possible the troops already there."

The next day General Liman left Constantinople for the Dardanelles. Thanks to the wretched loading of the Allied transports, which brought about their withdrawal and their reloading at Alexandria, and to the delay in sending the 29th Division, just one month was given the German general in which to make his plans and prepare his defenses before the campaign began. He gives one to understand that it was that month under his direction which saved the Turkish Army on the Gallipoli Peninsula from defeat.

[3] Note by General Hamilton: "This hits the bulls-eye."

It may have been. We know as yet very little about the Turkish plans and orders for the defense of the Straits. Certain it is that General Liman's assignment to command corresponded with a general Turkish reorganization which materially increased their forces at the Dardanelles, and that his arrival at Gallipoli was the signal for a drastic change from a rigid system of beach defense to one of tactical reserves.

On the other hand, in the month and more between the beginning of the naval operations and the arrival of General Liman the Turks apparently did a good deal to defend the Peninsula. Their nocturnal spade-work impressed General Hamilton as early as March 17, the day he reached the Dardanelles.

* * * *

In spite of the possibilities in initiation and surprise which their command of the sea gave the Allies, the defense had the greater advantage at Gallipoli. The terrain was all in its favor. There are comparatively few good landing places. The country is rough and difficult and the slopes generally steep.

The greatest advantage of the defense lay, naturally, in its shorter communications. It is but little over 100 miles by sea from Constantinople to the Dardanelles. This was the principal Turkish line of communication.

Railroads were somewhat distant. The nearest point on the Thracian Railroad, Uzun Keupri, was sixty-five miles by road from Bulair. Turkish roads are notoriously bad, but this one happened to be a good military *chaussee.* Crossing the isthmus it ran on the Saros side, and consequently lay under the guns of the Allied warships. During the campaign a cut-off had to be constructed along the Marmora shore.

On the Asiatic side of the Straits, the nearest railhead was Balikesri, 100 miles by dirt road from Chanak. In this district there were no paved *chaussees,* but a fair road ran from Karabigha, on the Marmora, to Chanak, a distance of sixty miles. This could be cut to forty miles by using Lapsaki instead of Chanak as the point of shipment across the Straits.

There were, therefore, three Turkish lines of communication: (1) By sea from Constantinople; (2) by rail to Uzun Keupri and thence by *chaussee* down the Bulair Isthmus; (3) by rail and road on the Asiatic side and thence across the Dardanelles. The sea communications, both direct to the Straits and via Karabigha, could be attacked by submarines, but, as events showed, they could not be severed. The Bulair route could be cut by a hostile descent on the isthmus. Were enemy guns installed on the isthmus they might cut the direct sea communications to the Straits, at least by day. But the capture of the isthmus would not cut the sea route via Karabigha. Lastly, the rail and road communications into Asia and the ferry service across the Straits were practically beyond the possibilities of enemy attack, except by air.

The Allied lines of communication were the long sea lanes from southern France and England. Their main base was established at Alexandria, in Egypt—which lengthened still more the overseas distances. The naval base at Malta served them to a certain extent. They also had one advantage that rarely falls to the lot of an overseas expedition, a well placed advanced base secure from enemy attack. The land-locked harbor of Mudros on the Greek island of Lemnos, sixty miles from the tip of the Gallipoli Peninsula, though lacking at first in all port facilities, afforded an excellent natural advanced base. Tenedos, Imbros and Mytilene were also used to great advantage by the Allies. This group of islands, ranging from fifteen to 100 miles from the landing beaches on Gallipoli, were of great value to the Allies throughout the campaign.

* * * *

The Turks had a great potential advantage over the Allies in that they were not seriously engaged on any other front during the campaign, except in far-away Mesopotamia. They had only to guard their short Bulgarian frontier, resist any Russian attack in the Caucasus, check the small Anglo-Indian Army advancing on Bagdad, see that the British did not cross the Sinai Desert into Palestine, and garrison their own territory. None of these was a difficult task, and all of them together constituted a drain on Turkish military resources incomparably less than that put upon the Allies by the presence of the German Army in northern France.

In March, 1915, the Turks probably had about 450,000 men under arms, and their forces increased during the spring and summer. Nothing but mismanagement and undeveloped transportation prevented them from assembling an army at Gallipoli several times as large as the Allies'. The demands of the main theater of war were such that the Allies never felt justified in raising their forces at Gallipoli above 110,000 effectives, and they attained that figure only for a short period in July-August. But they counted on the Turkish inability to assemble and maintain a greatly superior force, and events proved them right. It is doubtful if the 5th Turkish Army ever exceeded 125,000 effectives, and in neither of the critical periods of the campaign, April and August, did the Turks assemble equal forces to oppose the Allied attacks when they were launched.

* * * *

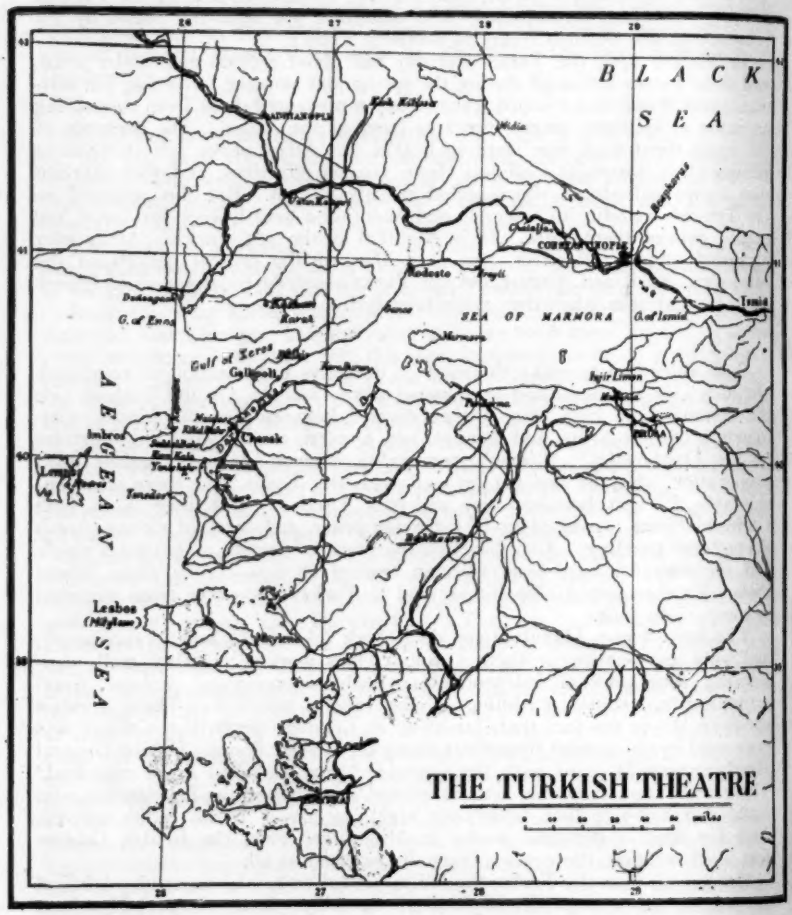
Both sides had to make the most of defective organization of command. On each side a general and an admiral were coequal. On the Turkish side the command on land was further divided between General Liman, commanding the 5th Army, and Admiral von Usedon, commanding the "Fortress of the Dardanelles." Liman's personality counted strongly against good cooperation. He did not get on well with the Turks, and there was considerable friction between him and von Usedon. But they were both German officers almost alone in a foreign army, and force of circumstances drove them together. Also they had the great advantage of having a single and all-powerful head—and German trained at that—fairly close behind them. Furthermore, Gallipoli was vital to Turkey—no other front mattered in comparison to it.

The British pair, Hamilton and de Robeck (Admiral Carden's successor), had only personality in their favor. They worked together well, considering their mutual independence. Each scrupulously, perhaps, overscrupulously, avoided meddling in the other's province. Their greatest handicap lay in the fact that, far away in London, the British Cabinet was engrossed in the greater operations going on at their doors. French General Headquarters, at grips with the German Army, also had to be consulted.[4] There was no one supreme head interested primarily in the Dardanelles who could run down to that front over night, as Enver Pasha could and did. And for three distressing weeks in May-June, when the British Cabinet was in dissolution, there was practically no head at all.

Even more than the Turks, the Allies needed unity of command. Admiral de Robeck was commander-in-chief of the Allied fleet. General Hamilton held supreme command over the Anglo-French troops (subject, of course, to tactful handling of the French generals); but when it came to air forces, and even to his own base in Egypt, his control was only partial. Worst of all, neither he nor de Robeck held the supreme power which was

[4] Note by General Hamilton: "In fairness to the French and to the British in France, it must be said it was expecting too much of men who were within rifle shot of enemy masses to weigh dispassionately the claims of Gallipoli to reinforcements or munitions. And all the powers of the army, all the old War Office Chiefs, all the general staff had been allowed to run off to gather laurels on the western front."

necessary to force combined action of the army and the fleet. The campaign cried aloud for combined action. Admiral Wemyss, Commodore Keyes and other officers of the fleet urged it again and again. Winston Churchill, whom the army as well as the fleet regarded as their best friend and main stay, urged it in the cabinet and out of it. But, after it had been decided to land the Army, he could never bring the sea lords at the Admiralty to the



point of ordering de Robeck to renew the naval attack. And yet combined operations were the obvious and almost necessary solution. Old battleships and new monitors, fit for hardly any other service and manned by relatively few men, were kept out of the fight while thousands and thousands of lives were sacrificed on land—in vain.

Had either the general or the admiral been given supreme command and the responsibility for forcing the Straits, it is probable that, in spite of natural reluctance to overrule the technical advice of a sister service, the

fleet and army would not have been beaten in detail. The admiral would hardly have spared the fleet had full responsibility for success rested upon him; nor would the general have spared it had he held supreme command.[6]

The Period Before the Landing

The seacoast defenses of the Dardanelles consisted of three groups of forts and batteries, the outer, intermediate and inner. The outer defenses consisted of three groups of batteries (twelve heavy[6] and four light guns in all) on the southern end of the Peninsula, and two groups of batteries (nine heavy and two medium guns in all) on the Asiatic shore opposite. Of these guns, but four were modern.

The intermediate defenses consisted of batteries on both shores, from a point three miles inside the Straits to two miles below the Narrows. On the European shore there were fourteen batteries, mounting ten heavy howitzers, twenty-two medium howitzers and mortars, fifteen medium guns, and twenty-one light guns and howitzers. On the Asiatic side there were thirteen batteries, mounting eight heavy howitzers and mortars, eight medium guns, sixteen medium howitzers and twenty-four light guns.

The inner defenses consisted of batteries grouped on both sides of the Narrows. On the European shore there were five battery groups, mounting thirty heavy guns (including two 14-inch), six medium guns and three medium howitzers. On the Asiatic side there were six battery groups, mounting thirty-one heavy guns (including four 14-inch), six heavy mortars, eight medium guns and four medium howitzers.

The inner and outer defenses had been installed before the war, and were mostly old pieces. Of the thirty batteries of the intermediary defenses, twenty-three had been installed since the declaration of war in November. They were in hastily constructed emplacements and many of them were mobile batteries.

There were ten lines of submarine mines anchored in the five-mile stretch from the narrows down. In all there were 377 mines in this part of the Straits, the average width of which is two miles. In addition, twenty mines were secretly anchored in Erenkeui Bay on March 8. It was these latter which caused such havoc on March 18. All these mines were contact, and all were under the fire of the intermediary and inner defenses. There were also about forty small floating mines which had been sent down from Constantinople. A Turkish General Staff report states that both anchored and floating mines contributed largely to their success on March 18.

There were three 18-inch torpedo tubes, with two torpedoes each, mounted on the pier at Kilid Bahr. They were quite conspicuous and easy to attack. The defenses were also provided with six stationary and six mobile searchlights. There were practically no defenses of any kind above the Narrows.

* * * *

It is extraordinary that the Turks should have left undefended the long stretch of water from the Narrows to Gallipoli Strait. From the beginning of the naval attack on February 19 to the evacuation of Anzac ten months later there was always the possibility that the Narrows would be forced or the heights dominating it be captured—which would have meant much the same thing. Yet in all that time the Turks had made no provision for the defense of the upper reaches of the Dardanelles. It is true that they could not have denied that water to British mine sweepers by means of permanent seacoast batteries, but they could have defended it by the fire of mobile

[6] Note by General Hamilton: "Correct."

[6] Heavy calibers 8.2-inch-14-inch; medium calibers 4.7-inch-5.9-inch; light calibers 1.8-inch-3.4-inch.

howitzers and guns concealed in the rolling country on both sides and the great mass of the Gallipoli Peninsula above Gaba Tepe—Kilia is much more defensible against a land attack than is the southern end.

Although they planted nearly 400 mines in the Narrows and below it, the truth seems to be that they had none for the upper Strait, and could not get them. They could not manufacture large anchored mines, though they did make about forty small floating ones, probably of doubtful value. They could get no material through from Germany and Austria until Bulgaria came into the war in early October.

* * * *

Admiral Carden planned a progressive attack, the principal phases of which were:

(1) Reduction of the outer defenses.
(2) Reduction of the intermediate defenses and sweeping of the lower lines of mines.
(3) Reduction of the inner defenses.
(4) Sweeping the mine-fields in the Narrows.

"In dealing with the forts," says the *Official Naval History*, "the general principle was to be an attack in three stages—first, a long range bombardment (direct or indirect) out of range or bearing of the enemy's guns; secondly, a bombardment at medium ranges, using secondary armament and direct fire; and thirdly, the final reduction of the forts by an overwhelming fire at decisive ranges of from 3,000 to 4,000 yards."

The naval operations began on February 19, with a heavy bombardment of the outer defenses. Five days of bad weather followed during which nothing could be done. On the twenty-fifth and twenty-sixth the bombardment was renewed and the outer defenses practically destroyed. The ships closed to very short ranges, 2000 yards and less, and demolition parties were landed. Then came two more lost days. On March 1 and the seven succeeding days the intermediary and the inner defenses were bombarded, both by direct fire from the Straits and by indirect fire from across the Peninsula. Unsuccessful attempts were also made to sweep the mine-fields by night. A lull of ten days followed, caused not by the weather this time, but by the increasing accuracy of the plunging fire from concealed guns and howitzers. Without effective airplane reconnaissance and spotting the fleet could not deal with this fire. The bombardments had also shown that long range fire from the ships could not destroy the forts. The fleet would have to close to decisive range, and closing was impossible while the enemy's mines remained intact. Night sweeping, supported by battleships was the answer, but the sweepers were slow and the current strong. Furthermore, the sweepers were manned by civilians—fishermen unused to battle or naval discipline. Also there was some anxiety about the supply of ammunition. Operations lagged.

On the eleventh Winston Churchill sent a telegram intended to spur the admiral on to more vigorous action. Carden agreed, but on the sixteenth he fell ill and was relieved by Admiral de Robeck. On the eighteenth the great attack was made.

In successive divisions the fleet penetrated to within 9,000 yards of the forts at the Narrows, rather more than half way up from Seddel Bahr. They engaged the inner defenses. The mine sweepers were ordered to advance and sweep the channel under cover of the battleships' fire. The forts were apparently dominated by the ships. A Turkish General Staff report says that "by 2:00 P. M. the situation had become very critical. . . . . All telephone lines were cut, all communication with the forts was interrupted, some of the guns had been knocked out, others were half buried, others again were out of action with their breech mechanism jammed; in

consequence the artillery fire of the defense had slackened considerably." But, before the mine-fields could be attacked the fleet itself had sustained severe losses and conceived itself to be in the midst of floating mines. After a third capital ship had been struck, and seven hours after the attack began, the admiral hoisted the "General Recall." The great naval attack had failed.

In their twelve actions against the forts, including the attack of March 18, the ships had fired 2,100 heavy and about 5,500 medium caliber shells. In the March 18 attack, according to the Turkish General Staff, the fortifications sustained the following casualties: "Four officers and forty men killed, seventy wounded, eight guns damaged and some ammunition depots and barracks destroyed."

The Allied fleet might possibly have forced the Straits had it returned to the attack the following morning. There is considerable testimony from the Turkish side, from Enver Pasha down, to bear this out. "In the attainment of such an important objective," says a Turkish General Staff report, "disregarding comparatively small losses, the enemy should have repeated his attacks with great force, and in all probability he would have succeeded in forcing the Straits by sea." The fleet had by no means destroyed the seacoast batteries (except in the outer defenses), and still less the mobile howitzers hidden behind the hills; but the last attack had very much demoralized the Turkish garrisons and exhausted the greater part of their ammunition. "In Fort Hamedie," says a Turkish General Staff report, "there were but five to ten rounds left, and the batteries on the European side were equally low. . . . . But we worked all night of March 18-19 redistributing ammunition and by morning we could have continued action." But, even the German officers present had, apparently, little hope of successful resistance if the fleet continued its attack.

Winston Churchill says: "We (presumably the Admiralty) suspected at the time (about March 18) the weakness and critical conditions of the Turkish defenses against the fleet." He drafted a cable ordering a renewal of the attack, but did not send it because of the opposition of the sea lords. Commodore Keyes, de Robeck's chief-of-staff, said a few days after the attack that he "had never felt so possessed of the power of the navy to force a passage through the Narrows as in the small hours of the nineteenth when he got back to the flagship after trying in vain to salve the *Ocean* and the *Irresistible*."

But Admiral de Robeck had undertaken the Carden plan for progressive reduction of the forts, and so far as he could see the reduction on March 18 had been very largely on his side. Three capital ships sunk in waters which were supposed to have been cleared of mines, three more seriously injured by mines and gunfire—one-third of his total force of eighteen capital ships out of action—such were the staggering results of that day. He thought himself confronted by a new danger, floating mines, carried down the Straits by the current. As a matter of fact his ships had run onto mines in Erenkeui Bay which the Turks had secretly anchored at night, but this he did not know.

He did know, however, that his defeat on the eighteenth had been due to mines. Whatever may have been the effect of his bombardment, moral or material, the mines were still intact. His mine sweepers were not powerful enough to sweep rapidly against the current of the Dardanelles.[7] The paravane had not yet been developed. He could not reasonably expect to get through the Straits with sufficient force to overcome the Turko-German fleet and capture Constantinople.

[7] Note by General Hamilton: "This was the real snag. Nor were the crews 'for it.' They were just ordinary fishermen. The destroyer force of sweepers created afterwards by Keyes was quite another affair."

Right on top of these serious losses and reflections came General Hamilton, just out from England, full of enthusiasm, his transports crowded with eager troops and waiting only an intimation from the fleet to take a hand, even the leading hand in the game. So on March 22, in the cabin of the *Queen Elizabeth*, the admiral threw down his cards. It was natural, considering the effect which his heavy losses must have had on him. And it was right, up to a certain point. There was an army ready to cooperate. Why shouldn't it cooperate?

The fatal mistake lay not in asking the army to cooperate, but in failing to cooperate with it by combined attack. In that conference on the *Queen Elizabeth* Admiral de Robeck gave no hint that thereafter the whole burden of the fight would fall on the army, that the fleet was thenceforth to function only as a convoying and bombarding adjunct to the troops. As a matter of fact, he had not then decided to limit the fleet to so secondary a rôle.[8] Certainly General Hamilton did not suspect that naval cooperation would be so limited, and to a large extent his plans during the following month were based, as we shall see, on the assumption of a combined attack with the fleet.[9]

The naval operations, considered as a means of forcing the Straits by ships alone, were unsound in theory and unsuccessful in practice. But at least they had shown that, in spite of all handicaps, the ships could go to the edge of the mine-field and there engage, with considerable effect, even the inner defenses. Most important of all, they had shown that the fleet could force the enemy to engage numerous field batteries in the defense of his all-important mines. Once the army was ashore the fleet could have materially aided it by drawing off the Turkish field batteries.

From April 25, when the army landed, to the appearance of the German submarine three weeks later, the fleet might well have resumed its attack on the Straits. The losses of March 18 in capital ships had been promptly made up. The mine sweepers had been reinforced from England by thirty-eight powerful trawlers, capable of sweeping upstream at 14 knots, and twenty-four destroyers fitted as sweepers. The crews of the sunken battleships, disciplined sailors instead of civilian fishermen, had been put on the sweepers, and "an incomparably superior sweeping force had been organized." A naval airdrome had been established on Tenedos and a small air force assembled. In short, the fleet was better prepared to attack when the army landed than it was when it undertook to force the Straits alone.[10] But no attack was made.

* * * *

At the conference of March 22, General Hamilton was faced with a grave decision. Should he land at once, or should he await the arrival of the 29th Division and the reorganization of his transports? The temptation to land immediately was very strong. So he might cover the naval defeat of the eighteenth, take advantage of whatever demoralization the great naval bombardment of that day had caused in the enemy's ranks, and, above all, cut short the Turkish concentration and defensive preparations on the Gallipoli Peninsula. "We might sup tomorrow night on Achi Baba," he wrote on the twenty-second. "With luck we really might." Had he been

[8] Note by General Hamilton: "Probably true. I must not name my authority, but I have been told quite lately and quite positively by one in the know that the reason which actually decided the Admiral to throw down his cards, to bring the Army in, was that he had learnt my plan was *not* for Bulair, but to land at Helles, where I would be directly supporting the Fleet in its attempts to get through—which, however, were never destined to be made."

[9] Note by General Hamilton: "Correct."

[10] Note by General Hamilton: "All true. The Fleet was twice as strong, and the mine sweeping was half the battle."

able to get his troops ashore at all, he might possibly have supped wherever he liked, even on the plateau of Kilid Bahr. He had with him 34,000 men and forty guns. On the other hand the Turks had but two regiments (9th Division) and nine batteries strung out in a thin line from Ejelmar Bay to Cape Helles, while the 19th Division (three regiments and three batteries), newly formed and not completed, lay in reserve near Maidos and Kilid Bahr. That was all on the southern end of the Peninsula—perhaps 12,000 men, with nothing to give them rapid support except the third regiment of the 9th Division across the Straits at Chanak. The Turkish defense had not then been reorganized and put on a sound basis by General Liman von Sanders and his German officers, but this, of course, General Hamilton did not know.

The reasons against an immediate landing were very strong. Lord Kitchener in his written instructions had said: "Before any serious undertaking is carried out in the Gallipoli Peninsula all the British military forces detailed for the expedition should be assembled so that their full weight can be thrown in." The 29th Division, Hamilton's one unit of regular troops, had not yet arrived—it was three weeks late. The Anzac Army Corps, except one infantry brigade, was still in Egypt. The transports he had with him had been loaded without thought of a rapid and orderly debarkation of men and material on a hostile coast. His base at Mudros afforded no facilities whatever for unloading or redistribution. He also notes: "No detail thought out, much less worked out or practiced, as to form or manner of landing; lack of gear (naval and military) for any landing on a large scale or maintenance thereafter; unsettled weather."[11]

He decided to withdraw his transports to Egypt, reload, give his troops more training and await the arrival of the 29th Division. "The Admiral," he writes on the twenty-second, "undertakes to keep pegging away at the Straits while we in Alexandria are putting on our war paint. He will see to it, he says, that they think more of battleships than of landing." And the Admiral did—practically nothing. His desultory fire on Turkish trenches, wire and bridges only served to warn the enemy of the coming land attack.

So the first great chance was lost—lost before it presented itself, lost when the Admiralty approved the Carden plan of progressive reduction of the Straits before the Army was ready, lost when Kitchener tied Hamilton to the much-delayed 29th Division, lost for lack of landing plans and proper care in loading the transports. The naval operations should not have been allowed to lag after March 8. The fleet was no less capable of renewing the attack on the ninth than it was on the eighteenth. The great attack of the eighteenth should never have been allowed to lapse into more than five weeks of inactivity. A little more hardy determination on the spot, a little more consistent foresight in London, and Constantinople would probably have fallen before the end of that month.

The Outstanding Features of the Terrain

We have seen that there were no Turkish defenses above Nagara Point. The mission of the Allied Army being to see the fleet through the Strait, it follows that General Hamilton's objective was the control of the lower end of the Gallipoli Peninsula, the lesser peninsula, from Gaba Tepe-Kilia down to Cape Helles. Given that control, he would hold in his hands the batteries on the European side of the Strait, and he could silence the Asiatic

[11] Note by General Hamilton: "No arrangements for evacuation and treatment of wounded. My principal medical officer and all his staff doctors did not arrive at Alexandria until April 1, nor did my administrative staff, A. G.'s and Q. M. G.'s."

batteries by observation from the European heights. The clearing of the mine-fields would then be a simple matter.

Now in the lesser Peninsula there are four very marked and important topographical features. Beginning at the north, just above the Gaba Tepe-Kilia line, there are the heights of Sari Bair, with a long spur running out to Maltepe. The military value of these heights lies in the fact that a hostile force occupying them could cut practically all the Turkish lines of communication running into the lesser peninsula. The overland route down the peninsula would have been completely cut. The landings at Kilia and Maidos (one and one-half and two and three-fourths miles from Mal Tepe) could have been controlled by artillery fire. Even the last possible landing at Kilid Bahr (five and three-fourths miles from Mal Tepe) could have been rendered practically impossible if Allied troops had held Mal Tepe and the Allied fleet had operated in the lower reaches of the Strait, below the mine-fields. Sari Bair therefore always offered the Allies the possibility of starving out the Turkish forces in the lesser peninsula, instead of defeating them on their own chosen ground.

The second topographical feature is the broad, flat valley running between Gaba Tepe and Kilia, across the waist of the peninsula. Streams in this valley drain into both the Aegean and the Dardanelles, the low water shed between them lying about one and one-half miles from the Aegean coast. The valley is dominated by Sari Bair to the north and by the Kilid Bahr Plateau to the south of it.

Next we come to the Kilid Bahr Plateau, by far the most striking and important feature of the terrain. It was, in fact, the citadel of the Turkish defenses of the Dardanelles. It sweeps in a great horseshoe, ten miles in length, around the Jambax Dere, and at both ends falls away precipitously down to the waters of the Straits. It rises gradually up to its outer rim, as if made to conceal whatever might be on it, and then suddenly falls away to the plains north and west of it and to the Soghanlu Dere to the south. Looking down from it over the lowlands at the waist of the Peninsula, one is reminded of the view from Lookout Mountain, except that there are no woods in sight.

The great plateau sends out but two important spurs—a low one which connects it to the north with a steep and narrow ridge (the Kalkma Dagh) that abuts on the Strait between Kilia and Maidos, and a long swale which runs to the southwest, across the head of the Soghanlu Dere, and connects the plateau with the high ground which centers at Achi Baba.

This brings us to the last of the outstanding topographical features of the lesser peninsula, Achi Baba and its adjoining heights. Except for the long open swale mentioned above, these heights have no connection with the Kilid Bahr Plateau. They run straight across the Peninsula on a line roughly W. N. W. by E. S. E., marked by the heights 472-709-518-488. They control the whole of the great slope which runs down to the toe of the Peninsula. Achi Baba (709 feet) is the dominant height, but the view from it of the Narrows and below is cut off by the Kilid Bahr Plateau and the spur 518. The heights centering at Achi Baba control neither the Narrows nor the citadel of the Kilid Bahr Plateau.

* * * *

In general, the broader valleys of the Peninsula were under cultivation at the time of the campaign. There were some trees, mostly olive, in the valley by Morto Bay and southeast of Gaba Tepe. For the rest, it was rocky ground covered only by low scrub. There were no swamps and the water courses were generally dry.

The Landing Plans

April 8 saw General Hamilton clear of Alexandria Harbor, on his way back to the Dardanelles. His troops followed him during the next ten days. He began to draw up his landing plan. What was his estimate of the situation at that time?

He says of his final talk with Lord Kitchener, on March 13: "When I asked the crucial question—the enemy's strength—K. thought I had better be prepared for 40,000. How many guns? No one knew. Who was in command? Djavad Pasha, it is believed. But K. says I may take it that Kilid Bahr Plateau has been entrenched and is sufficiently held. South of Kilid Bahr to the point at Cape Helles, I may take it that the Peninsula is open to a landing on very easy terms. The cross fire of the fleet lying part in the Aegean and part in the mouth of the Straits must sweep that flat and open stretch of country so as to render it untenable by the enemy. Lord K. demonstrated this cross fire upon the map." Aside from some military handbooks, a faulty map and the outline of a *Greek* plan, this was all the information General Hamilton was given by the War Office. Military Intelligence helped him not at all. He does not even appear to have been informed of the existence of a British General Staff study on the Dardanelles of 1906.[32] Nothing shows more clearly the complete breakdown of the general staff—no plans prepared and practically no information.[33]

On March 22 General Hamilton notes in his diary: "My Intelligence folk fix the numbers of the enemy now at the Dardanelles as 40,000 on the Gallipoli Peninsula with a reserve of 30,000 behind Bulair; on the Asiatic side of the Straits there are at least a Division, but there *may* be several Divisions. The admiral's information tallies and, so Birdie says, does that of the army in Egypt. The War Office notion that the guns of the fleet can sweep the enemy off the tongue of the Peninsula from Achi Baba southward is moonshine."

General Hamilton counted on having an Allied "grand total of about 80,000—probably panning out at some 50,000 rifles in the firing line." The consolidated field returns gave an "effective strength" on April 25 of 2,840 officers and 72,646 men, with 150 guns.

The point to mark is that Hamilton estimated the enemy's strength as numerically equal, if not superior to his own—though, of course, not concentrated. He also had every reason to believe the Turks superior in artillery. The rugged nature of the terrain and the practical certainty that the enemy had used their months of warning to entrench their positions, added to the difficulties which the Allies knew they had to face.

Now, with this situation before him, how are we to explain General Hamilton's plan of campaign? For the plain fact is that he divided his forces and made his main effort on that very "tongue of the peninsula" which he was satisfied the guns of the fleet could not deny to the enemy.

There were two possible plans of campaign which did not involve a landing on the Peninsula. They can be disposed of in a few words. A march on Constantinople from a point near Enos, in Thrace, was out of the question for two reasons—the troops were there to help the fleet pass the Dardanelles, not to play a lone hand, and their lack of land transport precluded any such overland campaign. A landing on the Asiatic side, to clear the southeast shore of the Dardanelles, was forbidden by specific instructions from Lord Kitchener, and should in any case have been ruled out because of the lack of land transport. "I had no transport, mechanical or horse, wheeled or pack, to enable me to support myself farther than five or six miles from the fleet," writes General Hamilton.

[32] Note by General Hamilton: "I never heard of this until I had been back some months, when the whole of our troops had evacuated."

[33] Note by General Hamilton: "There were only a few dug-outs there. All the real G. S. were in France."

General Liman von Sanders is reported to have said, in November, 1918, that, had he commanded the Allied forces, he would have landed on the Asiatic shore, opposite Tenedos. He does not make this statement in his recent book; but he does say that the Asiatic side "offered the enemy real chances of success," that the roads there were "fairly good," and that "it was the most vulnerable side of the fortress." General Birdwood looked with favor on the Asiatic side when landing places were being discussed early in April. Later in the campaign the "Asiatic plan" obtained strong French backing. It still has its advocates (see, for example, Major J. J. Bain's conclusions in his War College paper published in the *Coast Artillery Journal* of June, 1923).

To one who has gone over the ground from Chanak to Kum Kale, the advantages of this plan are not apparent. The country which an Allied advance would have had to traverse is even more rugged and difficult than that of the Peninsula. The rocky ridges, higher than those of Gallipoli, run in general perpendicular to the line of advance. The route of march would have been considerably longer. Both Allied flanks would have been exposed, the left to artillery fire from the Peninsula and the right to attack by Turkish troops.

But let us get back to the Peninsula. There were three sectors on which the Allied attack might fall—Bulair, Suvla-Gaba Tepe and Helles.

On March 18, the day after his arrival, General Hamilton reconnoitered from the bridge of a fast cruiser the Gallipoli coast from Bulair clear around to Morto Bay. His diary entries, made on that day, are remarkable. The Turkish fortifications at Bulair impressed him very much: "In a word, if Bulair had been the only way open to me and I had no alternative but to take it or wash my hands of the whole business, I should have to go right about turn and cable my master he had sent me on a fool's errand."

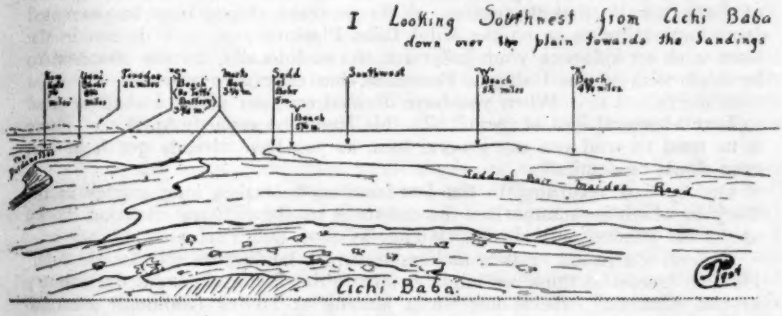
Much has since been written on the Isthmus of Bulair as the neck through which the Turkish communications passed and the point which General Hamilton should have attacked. It may be noted that there were three cogent reasons which induced General Hamilton to dismiss Bulair from his plans. The first was the strength of the Turkish field fortifications there. The second, General Hunter-Weston's estimate, in which General Hamilton apparently concurred, that "the Turkish Army in the Peninsula is being supplied and reinforced from the Asiatic side and from the Sea of Marmora, and is not dependent on the Isthmus of Bulair." The third reason was the strong opposition of the navy, because of shoal water and its distance from the Mudros base. It may also be noted that General Birdwood, when he had considered the problem as the probable commander-in-chief a month before, rejected Bulair.[14]

Sailing south on his reconnaissance from the sea, General Hamilton continues: "Suvla Bay itself seems a fine harbor but too far north were the aim to combine the landing there together with an attack on the southern end of the Peninsula." (So Helles seems to have been uppermost in his mind from the first.) "Were we, on the other hand," he continues, "to try to work the whole force ashore from Suvla Bay, the country is too big; it is the broadest part of the Peninsula; also, we should be too far from its waist and from the Narrows we wish to dominate. Merely to hold our line of communications we should need a couple of Divisions. All the coast between Suvla Bay and for a little way south of Gaba Tepe seems feasible for landing. I mean we could get ashore on a calm day if there was no enemy. Gaba Tepe itself would be ideal, but, alas, the Turks are not blind; it is a mass of trenches and wire. Further, it must be well under

[14] Note by General Hamilton: "Only one small landing place—from memory about 70 yards wide—in a rock-bound coast. We could only have worked on shore about a platoon at a time."

fire of guns from Kilid Bahr Plateau, and it is entirely commanded by the high ridge to the north of it. To land there would be to enter a defile without first crowning the heights."

Curiously enough he makes no notes in his diary on the stretch of coast, eleven miles long, from "a little way south of Gaba Tepe" to Cape Helles. Yet for a little over four miles south from Gaba Tepe, and again for over two miles directly opposite Achi Baba the land falls away to the sea in easy slopes and the beach is good. Infantry and mountain guns could have been landed anywhere along these reaches. A surprise landing on the first reach would have given direct access to the Kilid Bahr Plateau, two miles away, while the second reach lies but two and a half miles from the crest of Achi Baba. Nor does General Hamilton's diary bear any notes on the toe of the Peninsula—he becomes absorbed in the great naval attack going on that afternoon inside the Dardanelles.[15]



To what extent was his plan of campaign based on that "hurried scamper down the Aegean coast" (as he calls it)? To what extent was it influenced by Lord Kitchener's belief that the fleet could sweep the flat and open

[15] Note by General Hamilton: "The landing along the stretch four miles south of Gaba Tepe had been the scheme of the Greek General Staff, but that was before the Turks had made any preparations on Gallipoli and, actually, none of our sailors nor soldiers would look at it. We didn't know much, it is true; but we did guess the main strength of the Turks pretty accurately and we knew that would be found at Bulair, about Maidos and on the Kilid Bahr Plateau; we had also specific information of big guns upon the last-named place. Our danger was a gale from the north. Both at Anzac and "Y" Beach this would have been dangerous, but along the four miles south of Gaba Tepe the full force would have fallen and it would have broken up our boats altogether. On April 23 such a gale had blown! But apart from this an attack out of boats and up a glacis, like that of Gravelotte, against the commanding fortress of Kilid Bahr was too much to expect from human beings. We would not have thought of such a thing at Suvla had we not known that the Turks there were almost negligibly weak. Had we been able to get onto the dead ground at the foot of the Kilid Bahr bluff during the night? Yes—but to advance under that fire of artillery and musketry during daylight with Maidos and the Olive Grove guns outflanking us on our left and our boats being shot to pieces as they approached the shore—that simply was not in the picture. (N. B.—I had no mountain guns besides the two batteries of Indian popguns landed with Birdwood at Anzac.)

"As to the two miles directly opposite Achi Baba, I am very much inclined to agree, except with your remark that the beach is good. Certainly there is a strip of sand at the foot of the rough cliffs in fine weather, but I beg you ask one of your own American Navy men whether it is the sort of spot at which he would care to undertake to land 20,000 men and keep them supplied! All the same, I would think very seriously of landing a force there were I to throw the dice of war over again. 'Y' Beach was an analogous attempt, and if that failed I say it should not have failed. 'Y' Beach was my own personal idea and it nearly succeeded, as a landing opposite Achi Baba might have succeeded, because no preparation would have been made to guard against an operation which fell into the same category as that of Wolfe at Quebec. At the time, the objection of splitting up my force would have been urged by my own general staff—at least I think so. All the same, on the whole I agree with you here."

country south of Achi Baba so as to render it untenable by the enemy—a belief which he had already found to be "moonshine"? It is difficult to say; but this much at least appears certain, that he had a strong inclination toward landing at Helles from the first, and that he practically decided on it as a result of what he saw and heard during his first few days at the Dardanelles.

On March 22, five days after his arrival and with the picture still in his mind's eye of the great battleships in action, he writes that Admiral de Robeck "is greatly relieved to hear that I have practically made up my mind to go for the south of the Peninsula and keep in closest touch with the fleet." Then comes the period of reorganization in Egypt. While there he receives a cable from Lord Kitchener dated April 1, suggesting "the advisability of effecting the main landing in the neighborhood of Cape Helles and Morto Bay, while making a feint in considerable force south of Gaba Tepe, with the possibility of landing and commanding the ground of Sari Bair, so that the enemy, on its southern slopes, may be prevented from supporting those on the Kilid Bahr Plateau. . . . . I do not in the least wish to influence your judgment, formed locally, on the situation to be dealt with in the Gallipoli Peninsula, but only give you this for what it is worth. . . . . When you have decided on your plans, I shall be glad to have a general idea of them." To this Hamilton replied, April 4: "There is no need to send you my general idea, as you have already got it in one, even down to details."

On April 9, returning to the Dardanelles, he makes long entries in his diary in which he summarizes the estimates of the military situation drawn up by his generals—Birdwood, Hunter-Weston and Paris.

General Birdwood "rather inclines toward a landing on the Asiatic side." He also "seems to think we might dominate the Peninsula from the country around Chunuk." He is not for a landing at Helles (although a month earlier he had proposed it). General Hunter-Weston advises the abandonment of the campaign, or at least its postponement. "There is not in present circumstances," he writes, "a reasonable chance of success." If a landing must be made, he thinks the only landing places "worth serious consideration" are those near Suvla and Helles, and of these two he prefers Helles because "the fleet can also surround this end of the Peninsula and bring a concentrated fire on any Turks holding it. We therefore should be able to make sure of securing the Achi Baba position." General Paris, still more pessimistic, sees 250,000 Turks within striking distance. "To land would be difficult enough if surprise were possible, but hazardous in the extreme under present conditions." If a landing be made, he also prefers Helles because it "is the only place where transports can come in close and where the actual landing may be unopposed."

No one apparently suggested landing on a broad front between Gaba Tepe and Helles. Yet this would appear to have been perfectly feasible, and troops landed there could have been supplied without more difficulty than those which were actually landed at Anzac. Had the landings been echeloned in point of time and made left in front the limited boat space could have utilized at one beach after another, and Turkish reserves arriving from the north might have been held up—Kilid Bahr itself might have been taken by a *coup de main*.

But to get back to the estimates of the situation submitted by the British Generals: Hamilton notes their salient points in his diary. But he comments only on the suggestions of landing near Enos and on the Asiatic side—he will have none of them. "I am still for taking the shortest, most direct route to my objective, the Narrows."

Then comes his decision, announced on April 10, fifteen days before the landing. In brief, it was to make his principal effort at Helles, with the 29th Division and three battalions of the Royal Naval Division, supported later by the rest of the Royal Naval and French Divisions; to land the Anzac Corps north of Gaba Tepe ("a strong feint which may, and we hope will develop into the real thing"); to feint at Bulair, Kum Kale and Besika Bay. The objective of the Helles force was Achi Baba, and of the Anzac force Mal Tepe.

This was the vital decision of the campaign—the decision which led to consequences fatal to the Allies. When, many months later, the decision was reversed and the main axis of attack swung far to the north, the best chances of success had already been lost.

* * * *

All the discussions which have since been written on the pro's and con's of various possible plans, and especially on the landing at Helles, are beside the mark. They present the academic point of view, not that of the commander-in-chief at the time he made his decision. For this reason, General Hamilton's diary warrants the closest examination, since the essential lesson lies in the answer to the question, "Why was this decision made?" And on this crucial point General Hamilton's narrative, so brilliant and usually so clear, is not explicit.

"From the south, Achi Baba mountain is our first point of attack," runs the diary. " . . . . At the same time, also, the A. and N. Z. Corps will land between Gaba Tepe and Fisherman's Hut (just north of Ari Burnu) to try to seize the high backbone of the Peninsula and cut the line of retreat of the enemy on the Kilid Bahr plateau. . . . . The first and foremost step towards a victorious landing was to upset the equilibrium of Liman von Sanders. . . . . I must try to move so that he should be unable to concentrate either his mind or his men against us. . . . . I would like to land my whole force in one—like a hammer stroke—with the fullest violence of its massed effect—as close as I can to my objective, the Kilid Bahr plateau. But, apart from lack of small craft, the thing cannot be done; the beach space is so cramped that the men and their stores could not be put ashore."

Now, the upsetting of General Liman's equilibrium, desirable as it might have been, could only have been a temporary measure, an affair of forty-eight hours at most. It is difficult to believe that it was the paramount consideration in General Hamilton's mind. And what did he mean by "a victorious landing"? Did he choose his landing places with a view to final victory, the defeat of the Turkish 5th Army and the control of the Straits, or simply with a view to a successful *landing* of his forces?

His diary and despatches give the impression that the landing per se, and not the landing considered as the first approach to his final objective, was uppermost in his mind.[16] This is the meaning of the reference to Liman

[16] Note by General Hamilton: "Certainly it was so. In my mind the crux was to get my army ashore, a feat declared by von der Goltz and many others to be impossible. Once ashore, I could hardly think Great Britain and France would not in the long run defeat Turkey, as of course they could have had they put their backs into it. There were troops enough in Egypt alone to carry my attack through at that moment had I been able to call them up.

"Please bear in mind this point carefully: On April 24, 1915, the problem as it presented itself to us was *how to get ashore!* The dangers and difficulties alive before our eyes then were: (1) how to avoid being slaughtered in our boats and on the beaches; (2) how to get food, drink and munitions as we went on. The opposition of the Turkish Army, good as the Turkish soldier might be, would not then have availed anything against England, but, unfortunately, we had forgotten to reckon with the much more deadly opposition offered by the French General Staff, supported by British Generals in France!"

von Sanders' equilibrium. "Our first step of landing under fire will be the most critical as well as the most vital of the whole operations," he wrote Lord Kitchener on March 22. He was tremendously impressed by the "operation of landing in the face of an enemy—the most complicated and difficult in war." And well he might have been. But nevertheless the landing could only be the first objective; and there seems not to have been sufficient thought given to the consideration of the landing beaches as gateways to the final objective—the domination of the Peninsula and the Straits.

It was the irony of fate that General Hamilton should have encountered the greatest resistance and suffered the greatest losses at the very beach which was "supposed to be the softest landing of the lot" and which was farthest away from his final objective.[17]

* * * *

Why did General Hamilton choose Helles for his main effort? At Helles the terrain was all against the Allies. Not only did Achi Baba command the entire toe of the Peninsula right down to the cliffs above the beaches—an open, gently sloping plain almost devoid of cover—but the Turks had also the advantage of the security afforded by the Saghir and Soghanlu Deres. The Soghanlu Dere reminds one strongly of a deep Texan arroyo. The Soghanlu Dere, three miles to the northeast of Achi Baba, is a still deeper and much broader valley, the sides of which are not so precipitous. Both afforded excellent shelter for the Turkish reserves, dumps, etc., while those of the Allies lay under the fire of the enemy. Even had Achi Baba been taken, the terrain would still have been against the Allies. Achi Baba dominates to the southwest; but to the northeast the country is quite different. Surrounding the Jambax Dere lies a great semi-circular plateau, commonly called Kilid Bahr, its northern end resting on and commanding the Narrows. It is nowhere quite so high as Achi Baba, from which it is separated by the deep valley of the Soghanlu Dere. But the capture of Achi Baba would have been of little advanage to the Allies in a subsequent attack on the plateau of Kilid Bahr.

In favor of the Helles landings, General Hamilton thought that he could not be opposed there by more than one-tenth of the Turkish Army and that "with the exception of Helles, they (the landing beaches) were all commanded by elaborate net-works of trenches." General Paris suggested that a landing at Helles might be unopposed. Again the predominant idea seems to have been of the landing, and not of the final objective beyond the landing beaches.

Still more, apparently, did the idea of keeping "in closest touch with the Fleet" influence General Hamilton's decision to land at Helles. There were, of course, two sides to this. The first was the assistance the fleet could give the army. Of Helles, General Hamilton later wrote: "Always I could count on the close cooperation of the fleet; here my flanks rest upon a friendly element, even if all the armies of the Sultan converge upon my modest force." The hope of sweeping the enemy off the toe of the Peninsula by naval gun fire had been abandoned; but still battleships on both flanks of the army might count for something. Not until later did Hamilton realize that the terrain from Achi Baba south is slightly concave, "hollowed out like a spoon, presenting only its outer edges to direct fire from the sea."

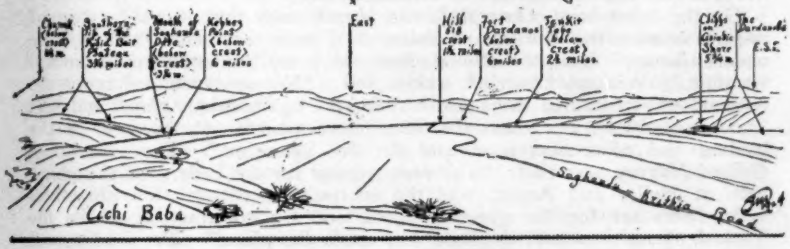
The other side of the question of cooperation with the fleet was the direct aid which the army might render in getting ships past the Narrows. The *Official Naval History* says that "it appears to have been full recognized that the key to effective cooperation between the ships and the troops was

[17] Note by General Hamilton: "You see the Turks had the same view of the problem as ourselves on this one *tactical* point."

the capture of Achi Baba as an observation point." And Winston Churchill writes that: "The possession of the vital observation point of Achi Baba would have enabled the indirect naval fire to be directed with the utmost accuracy upon the forts at the Narrows." As a matter of fact, the latter statement is only partially true. Achi Baba itself is a poor observation point to the east. Had Hill 518 also been taken, fair observation would have been had on the Asiatic batteries from Kum Kale to Kephez Point. But the Chanak group of batteries and all of those on the Gallipoli shore could not have been seen even from Hill 518. It is only when the little knoll of Tenkit Tepe is reached, two and one-half miles beyond Achi Baba and a mile beyond Hill 518, that these batteries come out from under the cover of the Kilid Bahr Plateau.

Nevertheless, the navy's strong desire for the possession of Achi Baba influenced General Hamilton to a large extent. Although Admiral de Robeck had called for assistance from the army, he had given no intimation that he would not cooperate by renewed naval attacks. On the contrary General Hamilton knew that there was a strong inclination in the fleet to resume naval operations, and in early April he had no reason to believe that they would not be resumed. When he left for Egypt, Com-

II Looking East from Achi Baba
(Dardanelles visible only at extreme right)



modore Keyes had cheered him with the hope of getting "his fleet sweeps so reorganized as to do away with the danger of mines by April 3 or 4; then, he says, with us to do the spotting for the naval guns, the battleships can smother the Forts and will alarm the Turkish Infantry as to that tenderest part of an Army—its rear." "Spotting for the naval guns" pointed, of course, to the capture of Achi Baba.

That the navy wanted Hamilton to land at Helles, and that they thought that line of attack would best contribute to combined operations is beyond question. Hamilton's mission was to see the fleet through, and naturally he wanted to land when he could best cooperate with a naval attack. But the navy never again attacked. To that extent they let him down.

The reason given by General Hamilton for the division of his forces—lack of small craft and beach space—is another indication that Helles was uppermost in his mind. For he could not increase his small craft by dividing his forces, and he need not have divided them for lack of beach space at Anzac. His reconnaissance from the sea on March 18 must have shown him that there was more than enough beach space between Suvla and Gaba Tepe for all his forces, and certainly far more than at Helles. But his inclination was all toward Helles, and there the beaches were cramped; there was not enough space to land the whole army. He enlarges on this point in his subsequent despatch describing the landing: "The beaches were either so well defended by works and guns or else so re-

stricted by nature that it did not seem possible, even by two or three simultaneous landings, to pass the troops ashore quickly enough to maintain themselves against the rapid concentration and counter attack which the enemy was bound in such case to attempt." Hence "landings at as many points as possible," even if it meant splitting his army in half.

So it comes down to this: Helles was chosen for the main effort primarily in order to "keep in closest touch with the fleet" in combined attack, and secondarily because landings there might not be vigorously opposed. Hamilton's dominant idea, aside from close cooperation with the fleet, was to get his troops ashore.[18] The landing he feared—what followed could be dealt with later. The division of his forces resulted from his theory that dispersion was necessary to insure landing against the least possible opposition.

Yet these explanations do not altogether explain. There was something behind the Helles landing and the division of the forces—the two great mistakes—that is not covered by the presence of the fleet or the lay of the land. One is forced back to a more simple theory—that General Hamilton greatly underestimated his enemy. I know that against this theory chapter and verse may be quoted. On March 18, for instance, Hamilton wrote Kitchener—"If it eventually becomes necessary to take Gallipoli Peninsula by military force, we shall have to proceed bit by bit," and on March 22 his diary notes—"Have cabled home begging for more engineers, a lot of hand grenades, trench mortars, periscopes and tools."[19] This certainly does not look like the expectations of an easy victory.

On the other hand, General Liman bluntly says that it was a case of underestimating the Turks, and Admiral Wemyss says that "things were underestimated." General Callwell speaks of it as "an untoward misunderstanding." Winston Churchill writes that: "No one estimated truly the tremendous strength of the Turkish resistance against the Army," and that "5,000 casualties . . . . was the War Office estimate of the cost of the landing and of a successful and decisive operation." The *Australian Official History* says that: "The main reason for the failure of the plans, both at Helles and Anzac, was the enormous extent of the objectives which were set for the covering force, and the contempt in which the Turkish Army was held by those who made the plans." The final report of the Dardanelles Commission states that: "At the outset all decisions were taken and all provisions based on the assumption that, if a landing were effected, the resistance would be slight and the advance rapid."[20] General Hamilton himself seems to acknowledge an underestimation of the enemy when he writes, two months after the landing: "The one fallacy which crept into your (*sic*) plans was a non-recognition of the pride and military morale of the Turk. There was never any question of the Turk being demoralized or even flustered by . . . . troops landing in the rear."[21]

Furthermore, nothing but an underestimate of the enemy really explains the facts. An able commander deliberately divides his Army in the face of an enemy whose forces, though necessarily dispersed over a sixty-mile front, probably equal his own in rifles and are superior in guns. He gives his enemy interior lines.[22] He launches his main attack straight up that

[18] Note by General Hamilton: "Correct."

[19] Note by General Hamilton: "Had they only been sent!"

[20] Note by General Hamilton: "I can't accept that. There may have been that *hope;* hardly an assumption."

[21] Note by General Hamilton: "If my memory serves me right, this was with reference to a remark by Lord Kitchener that if one submarine got through and waved a flag in the Marmora the whole of the Turks on the Peninsula would skedaddle."

[22] (Note: In fairness it must be said that General Hamilton did not think the division of forces would give the Turks interior lines. "With our sea power," he wrote, "we can shift a couple of brigades from Gaba Tepe to Helles or vice versa quicker than the Turks can march from the one theater to the other." Aside from the fact that the Allies enjoyed undisputed sea power for less than a month after the landing, this assump-

long glacis which ends with the double ramparts of Achi Baba. When he makes this decision he already knows much of the lay of the land—he has sailed around it and studied it through powerful glasses. He has seen that Achi Baba dominates the whole of the toe of the Peninsula except the beaches under the cliffs. He cannot get away from the sight of that rolling height. And it is plain that from that crest straight down the field of fire must be almost perfect—hardly a tree or a shrub offers concealment to a man creeping forward, hardly a dead space exists.

But that great glacis offers an ideal battlefield to one who feels sure that he has but to come to grips with his enemy in order to beat him. The beaches behind it are at least partially sheltered; the troops can get ashore; before them lies a great plain rising on the average but a hundred feet to the mile; their flanks cannot be turned; on the contrary, naval fire will give some support on at least one flank—an ideal field of battle if the enemy has not much stomach for the fight.

The landing of the Anzac Corps, thirteen miles to the north, fits into the picture admirably. It may well "develop into the real thing," the force thrown clear around the enemy to smash into his retreat and turn it into disaster.

In spite of much evidence to the contrary, of the pessimistic estimates of his chief subordinates and some of General Hamilton's own words before the campaign began, the impression one gets on the battlefield at Helles prevails—it was the Turks of Kirk Kilisse and of Lule Burgas, and not the Turks of Plevna whom Hamilton expected to meet at Gallipoli.

And indeed there was then little reason to rate the Turks as first-class fighting men. Nearly forty years had elapsed since the days of Osman Pasha, and not yet three since a Bulgarian army had swept through Thrace with but feeble opposition. In the Great War itself the Turks had already been badly beaten by the Russians in the Caucasus and by the British on the banks of the Suez Canal. It was a natural error to make, that of underestimating the Ottoman fighting power; but it was one rarely equalled in disastrous consequences.

I add to this long discussion of the landing plans but one comment from the opposing side. A Turkish General Staff report says: "After a serious demonstration at Helles, a landing (of the whole force) between Gaba Tepe and Suvla would probably have been more successful; at any rate it is worthy of consideration. A successful landing there, on the waist of the Peninsula, would have meant the speedy capture of the vital area."[28]

The Naval Support of the Landing

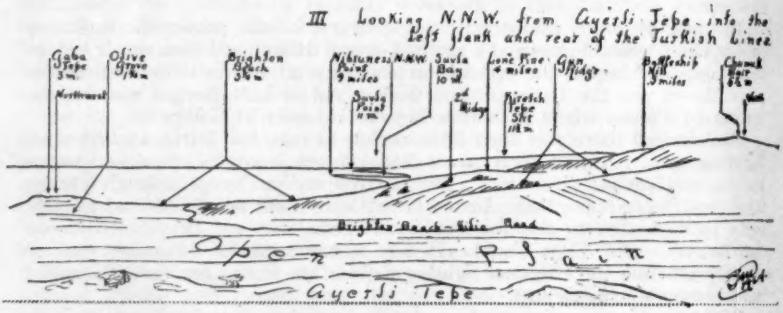
The entire operation of landing at Helles and Anzac was handled by the Allied fleet. Considering their imperfect equipment in small craft and the

tion of General Hamilton's is open to serious doubt. The overland road distance was about 11 miles—say four marching hours. The embarking and debarking at Anzac and at Helles had to be made in small boats, under fire. At both places the transports had to lie well off shore to avoid the enemy's shells. The steaming distance was at least fifteen nautical miles. It does not seem possible that a force of anything like "a couple of brigades" could have been embarked, transported and debarked inside of four hours. As a matter of fact, on the night of May 5-6 (in fairly rough weather, it is true) five hours were spent in embarking two brigades at Anzac.)

[28] Note by General Hamilton: "To this there was one absolutely vital objection. There was not enough water to keep the Army alive. Take the base of about 3,000 yards which is the chord of the arc formed by the Anzac trenches between April 25 and August 8. There was only a little brackish water in wells dug by ourselves which quickly became exhausted. I could not have watered another brigade from that base. If Gaba Tepe and Suvla Bay are included, there would have been water for the flanks—but what a wide extension of front! Further, there was no room on the narrow strip of sand between hills and sea on the actual Anzac beach to stock the reserves of food and munitions necessary in case a storm cut off communications for a week. No; it was too difficult!"

difficulties of getting the right troops on the right beaches at the right time in spite of strong currents, of providing proper covering fire, etc., etc., it was a notable feat. As General Hamilton says: "Staff officers who have only had to do with land operations would be surprised, I am sure, at the amount of organized thinking and improvization demanded by a landing operation. . . . . The diagrams of the ships and transports; the list of tows; the action of destroyers; tugs, lighters, signal arrangements for combined operations; these are unfamiliar subjects, and need very careful fitting in."

One serious error was made. The Anzac Corps was to have been landed on a 1,600-yard front, the right 800 yards north of Gaba Tepe. It was actually landed on a very narrow front, the center being about 4,400 yards north of that promotory. Some have claimed that this was fortunate for the British because of the guns near Gaba Tepe. But it was not according to plan. Instead of landing at least the right flank before a low stretch of ground affording easy access into the interior, where the guns of the fleet might have helped them, the entire force came straight up against the most



rugged and difficult escarpment of Sari Bair. They were landed in the dark at the very point where the beach was most cramped by jutting cliffs and which General Birdwood had previously described as "so very difficult and broken that it is impossible to attempt a landing there while it is dark."

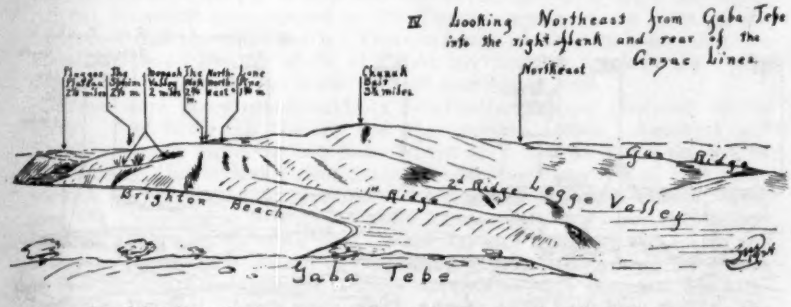
The transports had sailed from Mudros on the evening of April 24. Between midnight and 1:00 A. M. of the twenty-fifth they reached the *Triumph*, which the *Official Naval History* says "had been sent on overnight, with orders to anchor quietly at the exact rendezvous five miles west of Gaba Tepe." The troops were then transferred to small craft. The moon set at 2:30 A. M. By 3:00 A. M., it was very dark, and at 3:30 A. M., the order to advance was given. The boats approached the shore at a speed of five knots, and were swept to the northward by a current which they did not know existed.

It is not clear whether the *Triumph* took up her position by daylight, and hence it is not certain that she was accurately placed. Nor is it apparent that, from the rendezvous fixed by the *Triumph*, the British had any means, other than small boat compasses, of steering accurately towards the appointed beaches. In approaching the shore the first boats formed a line of twelve tows. The right flank tow was to be the guide. So dark was the night that the third tow from the right failed to see the guide and swung to the left. The senior officer was in the left flank tow. The junior officer who should have guided also swung to the left, conforming to what he supposed to be the movement of his senior.

Even if the *Triumph* had been accurately placed, a current of a knot an hour, to say nothing of the mistake about the guide, would have carried the boats well off their course before they reached the beach about 4:30 A. M. Under these circumstances it is perhaps remarkable that they should have missed their intended landing by less than two miles. To naval officers approaching a long coast on a dark night one beach may have seemed about as good as another. But an error of more than a mile and a half in the position of an army corps on the field of battle is generally serious, especially when that corps finds before it a very difficult and altogether unexpected kind of terrain. The resulting confusion destroyed completely its carefully prepared plans.

Furthermore, landing on a front of only a few hundred yards instead of one of nearly a mile made a very great difference. A Turkish General Staff report suggests that, had the Anzac Corps landed on a broader front (as was planned), it would have outflanked the Turkish troops and "gained its objectives with more certainty and speed."

There appears to have been a lack of understanding between the army and navy here. Had the navy been sufficiently impressed with the im-



portance of landing the troops exactly according to plan, had the army made clear the necessity, it seems probable that some method other than that used could have been found. Submarines for instance, might have located themselves by daylight observations through their periscopes. Having done so, they could have laid on the bottom until the appointed hour when their lights, showing only seaward, could have fixed a line to guide the approaching flotilla. Or other methods, such as the use of buoys, might have been devised had the naval authorities realized that the entire plan hinged on an accurate landing.[24]

* * * * *

This brings up the whole question of night versus day landings. General Hamilton wanted to make his landings just before dawn. The naval authorities opposed this strongly, largely because of the difficulty of making the beaches by night. The result was a compromise—a landing before dawn at Anzacs and a daylight landing, preceded by a naval bombardment, at Helles.

It cannot be said that these two experiments proved anything except the great disadvantages incident to both day and night landings. At Helles General Hamilton's most poignant fear was realized. His troops came under a severe fire before they were well ashore. Their losses were very heavy, and at one point (V Beach) they were held at the water's edge until

[24] Note by General Hamilton: "Remember, annihilation would have been the penalty had the Turks got wind of the landing place beforehand."

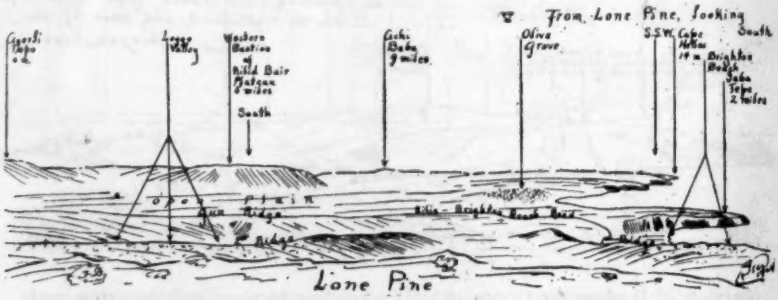
nightfall. But on the other hand, the experience at Anzac more than sustained the naval opposition to landing by night. The fundamental mistakes made in approaching the coast in the dark were irreparable.[25]

* * * *

A more discussed point in the cooperation of the navy was the supposed failure of its fire against land targets. The army was disappointed in the effect of naval shells, and to a certain extent the fleet, also, was surprised at its inability to keep down the Turkish fire at some critical moments.

The outstanding example was V Beach. The rising ground behind it forms an amphitheater about 500 yards wide and 500 in depth. It does not seem possible that anything could have lived in that confined space under the fire of a battleship. Yet *Queen Elizabeth, Cornwallis* and *Albion* "and other ships" battered it at intervals for a full twenty-four hours. At least eight 15-inch, eight 12-inch and a score of 6-inch guns had their fling at that most obvious target at close range—and still the Turkish rifle and machine gun fire broke out wherever the big guns laid off.

But we must remember two things: First, that the landscape, even at V Beach, is fairly large, and there were very few Turks in it to be hit;



second, that troops in the field sustain relatively slight losses from armor-piercing shells. Even the British "common shell" were ineffective against land targets. What they needed (and did not have) were high capacity shells with instantaneous fuses.[26] In the soft limestone and clay of the Peninsula, the British shells either went in a long way and broke into few pieces on explosion, or else, particularly at long range, they ricocheted over the crest and disappeared into the blue.

Furthermore, the targets differed entirely from anything the Navy had experienced. The low site of the guns and their flat trajectory also counted against them. As Admiral de Robeck said in his telegram of May 10—"When it is a question of trenches and machine guns the navy is of small assistance; it is these latter which have checked the army."

In moral effect, there seems to be no doubt that the naval fire weighed in the scale. All Turkish accounts speak of the terrific bombardment and of the difficulty in getting their men sufficiently accustomed to this sort of fire to enable them to hold on. The material damage may have been slight in comparison to the weight of metal thrown, General Hamilton may have

[25] Note by General Hamilton: "The currents ran much faster at Helles than at Anzac."

[26] Note by General Hamilton: "I said so over and over again; but the sailors, afraid of Lord Fisher, dared not press for any of these extras. I myself could not write to the Admiralty because of War Office jealousy. Had the demands been able to reach Churchill all would have been well, but that was just the hitch."

thought that "before they will be much good at landmarks the sailors will have to take lessons in the art," but the Turks had little stomach for the navy shells, particularly at first.

Still less did they like the enormous shrapnel fired by the 15-inch guns of the *Queen Elizabeth*. The *Official Naval History* and General Hamilton's diary both speak of a single 15-inch shrapnel wiping out a Turkish company near Y Beach on April 28. The moral effect of this fire on the hard-pressed British troops was certainly good. And it can well be imagined that those huge projectiles, bursting in air and shooting out great sprays of lead, 13,000 bullets a throw, considerably disheartened the Turks."[27]

In covering the landing of the troops the navy put some fine feats to its credit. The bombardment of the Turkish battery on Gaba Tepe on the morning of April 25 was an excellent bit of work. The cruiser *Bacchante* was ordered to silence that troublesome battery, and, in order to get her guns to bear on the reverse slope of the promontory, her captain brought her slowly onto the beach until her stem touched ground. Then he opened fire, with good effect.

At X Beach the battleship *Implacable* covered the landing. She came in until her anchor, hanging outboard, dragged in six fathoms of water. She then let go close on the five fathom line about 450 yards from the shore. All her broadside guns opened on the Turkish trench on the crest of the forty-foot cliff above the beach. There are indications, even today, that she literally blew off the top of the cliff. At any rate her fire kept the Turks down, and the landing was made without appreciable loss.

There were many other incidents of effective support rendered by the Navy. The battleship *Goliath* and the cruisers *Dublin*, *Amethyst* and *Sapphire* greatly aided the battalions landed at Y Beach. Later the fire of the cruisers *Dublin* and *Talbot* made possible the recapture of that same position by a battalion of Gurkhas. On April 27 *Queen Elizabeth*, firing over the Peninsula at a range of about 12,000 yards and with kite-balloon spotting, sank with her third shot a large Turkish transport and forced the enemy to use Akbach instead of Maidos as a debarkation point for troops from Asia and Constantinople. There appears to have been but one kite-balloon in the fleet. Much more effective work could have been done by the naval gunners had a greater number of these balloons been available.

A point to note, in connection with the naval fire, is that artillery officers of the army were assigned to some of the ships as assistants in directing the fire, and with "excellent results," according to naval accounts.

* * * *

The success of the *River Clyde* must also be credited to the navy. The idea of using that harmless-looking old collier to run 2,000 troops straight onto the beach apparently originated in the Fleet, and the ship was commanded by a naval officer. Although the pontoon bridge which was to have connected her with the beach was promptly carried away by the current and the Turkish fire, and although the first company that issued from the great doors in her bows was decimated, her iron sides protected the rest of the troops throughout the day and her machine gun battery fired on the Turkish trenches at point blank range. General Hamilton says of her: "This device, borrowed from the Iliad, was predestined to save my force from losses which hardly bear thinking about." It is a device which may well be used again on any rapidly shelving shore.

[27] Note by General Hamilton: "There were, I think, only twenty-five of them altogether."

In the naval operations as a whole a point to be noted is the effect of submarines. The first British submarine to reach the Marmora dived under the nets and mines of the Dardanelles on April 25. After that date and until the end of the campaign, with the exception of a few days, the British kept at least one submarine in the Marmora. The passage of the Narrows was successfully made twenty-seven times. General Liman says that not once did the British submarines in the Marmora succeed in preventing maritime traffic. But this is certainly an exaggeration. It should be balanced against the equally exaggerated statement of Ali Riza Pasha, a Turkish General at Gallipoli, that after the submarine operations began it was only with the greatest difficulty that the army could be supplied across the narrow neck of Bulair and from the Chanak side. The British submarines sank, as a matter of fact, sixty-two steamers and 148 sailing ships. One of their victims was an old battleship; another was a large transport carrying an infantry brigade and several batteries of artillery. So great was their moral effect, at least at first, that the Turks dared not transport troops even across the Dardanelles by day. It is true that the submarines could not sever the Turkish sea communications; but they did make those communications slow, hazardous and uncertain, and throughout the campaign they practically confined movement in the Marmora to the hours of darkness.

The German submarines also had a great effect on the campaign. Early in May the *U-21* was sent through the Straits of Gibraltar into the Mediterranean. Soon after her presence in the Aegean became known the *Queen Elizabeth* was sent home. On May 25 and 27 she sank the *Triumph* and *Majestic* off the Dardanelles. After that the heavy ships were kept almost constantly in netted harbors. The battleships "offered it over the offing," in General Hamilton's picturesque phrase. The maintenance of the overseas lines of supply became very difficult. "All reinforcement, ammunition and supplies had to be brought up from Mudros to Helles or Anzac by night in fleet sweepers and trawlers," says Hamilton. Naval support to the troops on shore was thenceforth confined to the guns of light cruisers and destroyers, and of some new monitors which arrived toward the middle of July.

* * * *

To a large extent the opposing armies were left to fight it out alone. The two navies played a relatively minor part. General Liman makes it plain that he got very little assistance from his German colleague, Admiral Souchon, who commanded the Turkish Fleet. It would appear that the larger Turko-German ships, particularly the *Goeben*, might have assisted in long range bombardments after the British capital ships had been driven to seek protection from the submarines.

Likewise General Hamilton's diary several times expresses his ardent wish that the British Admiral might find it possible to renew the naval attack. A conception of professional etiquette which seems to have been over-scrupulous made the general refrain not only from asking the admiral to attack, but even from suggesting it. Yet all during the campaign there were two schools of thought in the Allied fleet. Admiral Wemyss, second in command and later commander-in-chief, and also Commodore Keyes, chief of staff, on several occasions urgently advocated the renewal of the attempt to force the Straits. Admiral de Robeck himself, on May 10, intimated his readiness to make the attempt if the Admiralty would take the responsibility of giving the order. But it was not to be. The campaign was fated from the first to be, not a combined operation in the full sense

of that term, but one of successive attacks, first by the Navy and then by the army.

(NOTE: The portion of Major Miles article dealing solely with land operations is omitted. The following pages sum up the entire article.)

RETROSPECT

The Dardanelles Campaign was lost to the Allies when their exhausted battalions were driven off the crests of Sari Bair in the August attack. A brilliant stragetic move, perhaps the most profound conception in grand strategy of the whole war, ended in a great tactical defeat. Such was the story of the Allied expedition against the Straits.

Like the Opening of the Mississippi and the March to the Sea, the Dardanelles Expedition was conceived to cut through a weak flank of the enemy's position, to link the encircling forces in closer union, to confine the enemy within the narrower limits and to complete the blockade. Had it succeeded, in all probability it would have strengthened and saved Russia, swung the Balkans to the Allied side, relieved the Allies from danger in the Near East and in India, confined the Central Powers between the Carpathians and the North Sea and shortened the war by one, if not two years. But it failed before the very outposts of the great Turkish fortress.

Nevertheless, the capture of those outposts would probably have been as decisive as Vicksburg or Atlanta. It is true that Gallipoli is really two peninsulas and that that greater one, above the Gaba Tepe-Kilia isthmus, is by far the more defensible of the two from the standpoint of land operations. But the lesser peninsula, which the Allies came so near mastering, alone covered the mine-fields, and the mine-fields were the real defense of Constantinople.[29] They were the defensive factor which prevented the fleet from forcing the Straits. Fortress and army existed only to defend them.

So the capture of the Narrows would really have given the Allies control of the Dardanelles. The passage of the Dardanelles would have meant the elimination of Turkey and the opening of the Bosphorus. Constantinople is quite indefensible in the face of a naval attack from the Marmora. Weak as Russia was after May 2, her Black Sea fleet was unimpaired and an attack on Constantinople would have brought out her cooperation. The city would certainly have fallen. And, as an observant German remarked, "Constantinople was Turkey."

In short, Gallipoli was a tragedy in which the dramatic climax was enacted on the crest of Sari Bair. Outpost of the Dardanelles Fortress, it was nevertheless the key to Constantinople. Success or failure in the campaign balanced on that ridge. As General von Sanders says, in the August attack "victory several times hung by a thread."

The British failed because they blundered repeatedly. "Muddling through" is an Anglo-Saxon vice in the conduct of war—we also have sometimes exhibited that inherited trait! This time the British muddle true to form—but they did not get through.

And when we Anglo-Saxons muddle in war we usually blame our civilian statesmen and politicians, sometimes with reason. But let us be fair—in the Dardanelles Campaign it was not the civilians who blundered most. A civilian did conceive the campaign and push it with all his energy. That was not a blunder, though his enthusiasm sometimes led him at too fast a pace. And, besides, that civilian himself had been a soldier and had had considerable war experience. The rest we must lay at the doors of generals and admirals.

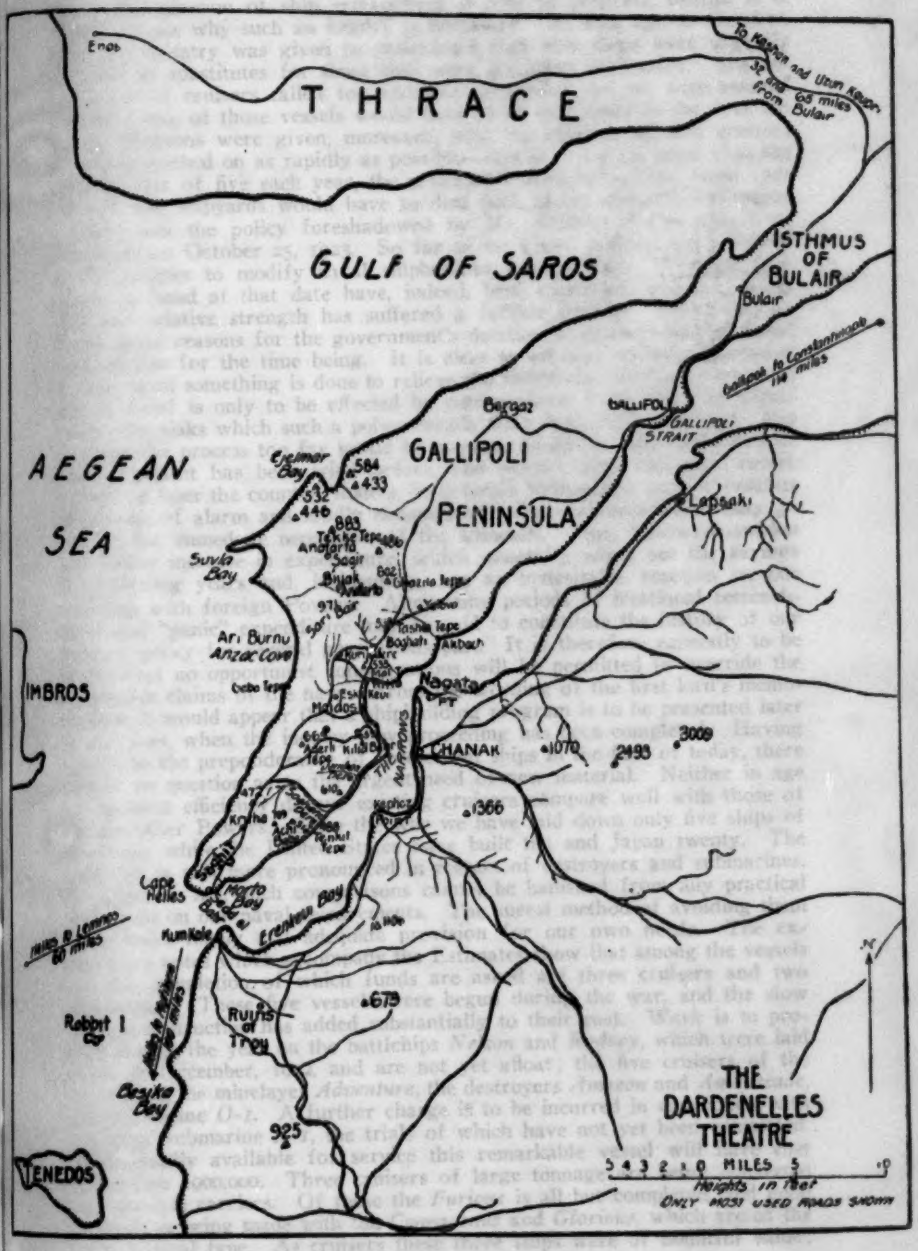
[29] Note by General Hamilton: "Correct."

The long weeks of hesitation about sending a military expedition; Lord Fisher's vacillation; the silence of the naval experts in the discussions of the War Council; the theory of an attack with limited commitment; the launching of the naval attack before the Army was ready; the renunciation of the naval attack at the first serious check and the appearance of the army; the failure to renew the naval attack when and after the Army landed; the utter lack of staff studies or plans of the War Office; the eleventh-hour designation of the commander-in-chief; his hasty departure from England without information or plans and with but half his staff; Lord Kitchener's insistence that the expedition should not land without the belated 29th Division; his categorical refusal to send aeroplanes; the confusion and mismanagement in the loading of the transports; the delays and even failure throughout the campaign in sending of replacements and munitions; the divided command; in all these matters the responsible hand was that of a general or an admiral. Whatever we may think of General Hamilton's plans or the execution of those plans, there is no denying the fact that the real causes of failure lay much farther to the rear, and in men who wore the King's uniform.

On the Turkish side the defense was not brilliant, but it was sound and methodical. Also it was ruthless. The German commander and his German-trained subordinates did not hesitate to throw their battalions time after time on the Allied trenches. Heavy as were the Allied losses—in round numbers 31,000 killed, 79,000 wounded and 10,000 missing—the Turks suffered very much more—76,500 killed by the enemy or by disease, 100,000 wounded, and 10,000 missing. And in the last analysis it was the stubborn fighting qualities of the Turkish soldier, his great endurance and unflinching morale, that brought him victory.

GREAT BRITAIN

The Engineer, 20 March, 1925.—The Navy Estimates for 1925-26 show a net total of £60,500,000, which is £4,700,000 more than those for the expiring financial year. We learn from the first lord's memorandum, however, that considerably more than half of the net increase is due, first, to charges in connection with the fleet air arm, which have not hitherto appeared in navy votes; and secondly, to increases in wages and prices, the automatic growth of non-effective votes, and the depletion of surplus war stores. In accordance with the government's decision, a special overhead deduction has been made on the provision of contract work in the votes for shipbuilding, naval armaments and works to discount in advance possible delays in the progress of such work. If, however, no delays occur, Parliament will in due course be invited to make good the deficiency to whatever extent may be necessary. In spite of their somewhat formidable total, the Estimates for the coming year do not provide for any new construction. This omission is the more surprising in view of the strong protest that was raised by members of the present government when the Labor Cabinet whittled down the building program which had been introduced by Mr. Baldwin's first administration. The program in question was put forward as being, in the Admiralty's judgment, the minimum required to maintain the accepted standard of naval strength. Eight cruisers and twelve other vessels were demanded. One of the first acts of the Labor Government was to strike out three cruisers and all but two of the subsidiary craft. When the political pendulum swung back and Mr. Baldwin returned to office with an overwhelming majority it was widely assumed that the vessels so dropped would be reinstated in the next Navy Estimates, together with such additional ships as might be needed to maintain the Admiralty's policy of replacing obsolete material. This has not been done. On the contrary, an investigation into


THRACE
GULF OF SAROS
AEGEAN SEA
GALLIPOLI PENINSULA
ISTHMUS OF BULAIR
Bulair
Bergaz
GALLIPOLI
GALLIPOLI STRAIT
Lapsaki
Suvla Bay
Ari Burnu
Anzac Cove
IMBROS
Negata Pt
CHANAK
1070
2493
3009
1366
Kum Kale
Rabbit I
Ruins of Troy
679
925
TENEDOS
THE DARDENELLES THEATRE
5 4 3 2 1 0 MILES 5
Heights in feet
ONLY MOST USED ROADS SHOWN

THRACE
GULF OF SAROS
ISTHMUS OF BULAIR
GALLIPOLI PENINSULA
AEGEAN SEA
THE DARDANELLES THEATRE

the whole question of ship replacement is now in progress, though it is difficult to see why such an inquiry is necessary. As long ago as October, 1923, the country was given to understand that new ships were urgently required as substitutes for those that were becoming ineffective. The replacement of cruisers called for particular attention, and we were assured that fifty-two of those vessels would have to be laid down in the next ten years. Reasons were given, moreover, why the building of new cruisers should be pushed on as rapidly as possible—that is to say, at more than the average rate of five each year, the principal reason being that, from 1927 onward, the shipyards would have to deal with heavy destroyer contracts.

Such was the policy foreshadowed by Mr. Baldwin in his speech at Plymouth on October 25, 1923. So far as we know, nothing has occurred in the interim to modify naval shipbuilding requirements. Foreign programs in hand at that date have, indeed, been expanded, with the result that our relative strength has suffered a further decline. There are, no doubt, good reasons for the government's decision to suspend further naval construction for the time being. It is clear to all that the country cannot prosper until something is done to relieve the intolerable burden of taxation, and if relief is only to be effected by cutting down expenditure on armaments, the risks which such a policy entails must perforce be accepted. But to carry the process too far would be not only dangerous but uneconomical. The expedient has been tried before, and always with the same result. Sooner or later the country, finding its defenses falling into neglect, exhibits symptoms of alarm and loudly demands remedial measures which may go beyond the immediate necessities of the situation. Then follows a sudden and heavy increase in expenditure, which generally wipes out the savings of preceding years and, incidentally, has an undesirable reaction on our relations with foreign Powers. Alternating periods of irrational retrenchment and "panic" expenditure may be said to constitute the history of our defense policy for several generations past. It is therefore earnestly to be hoped that no opportunist considerations will be permitted to override the reasonable claims of the navy. From the wording of the first lord's memorandum it would appear that a shipbuilding program is to be presented later in the year, when the inquiry now proceeding has been completed. Having regard to the preponderance of obsolescent ships in the fleet of today, there can be no question as to the urgent need of new material. Neither in age nor general efficiency do our existing cruisers compare well with those of certain other Powers. Since the war we have laid down only five ships of this type, while the United States have built ten and Japan twenty. The disparity is still more pronounced in respect of destroyers and submarines. Invidious or not, such comparisons cannot be banished from any practical discussion on our naval requirements. The surest method of avoiding them is to make timely and adequate provision for our own needs. The explanatory notes which accompany the Estimates show that among the vessels for the completion of which funds are asked are three cruisers and two submarines. These five vessels were begun during the war, and the slow rate of contruction has added substantially to their cost. Work is to proceed during the year on the battlehips *Nelson* and *Rodney*, which were laid down in December, 1922, and are not yet afloat; the five cruisers of the *Kent* class, the minelayer *Adventure*, the destroyers *Amazon* and *Ambuscade*, and submarine *O-1*. A further charge is to be incurred in connection with the large submarine *X-1*, the trials of which have not yet been completed. When finally available for service this remarkable vessel will have cost more than £900,000. Three cruisers of large tonnage are being converted into aircraft carriers. Of these the *Furious* is all but completed, and good progress is being made with the *Courageous* and *Glorious*, which are of the same general type. As cruisers these three ships were of doubtful value;

as aircraft tenders they should prove invaluable, thanks to their ample deck space and high speed of 31 knots. We are not surprised to hear that boiler repairs on a large scale will occupy the Royal Dockyards during the next few years. The greater part of our fleet now consists of vessels which saw hard service in the war. The fact that many of them are still good steamers is a fine tribute to the quality of the workmanship put into their machinery. But there is a limit to the endurance of the best material, and it has now become necessary to renew the boiler tubes of practically all cruisers and destroyers which date from the war.

If the navy has not yet emancipated its aviation service from the leading strings of the air ministry, it appears to have made a fresh stride in that direction. No other inference can be drawn from the inclusion in the new Estimates of a large sum "on account of the cost of the fleet air arm," for it is scarcely conceivable that the Admiralty would countenance heavy expenditure on a branch of its service—and an integral branch of that—over which it was to be denied absolute control. Eighty naval officers are now undergoing instruction at Netheravon as air pilots, and when fully trained they will relieve an equivalent number of royal air force officers who are at present serving in the fleet air arm. As this principle is to be extended, it is only a question of time before naval men entirely replace members of the R.A.F. as pilots and observers in the navy's air service, thus bringing the present anomalous system to an end. The possible utility of airships for naval scouting in great oceans is recognized by the Admiralty, which, in concert with the Air Ministry, is studying the designs of mooring masts in ships. Such masts have already been tried experimentally in the United States Navy, apparently with good results. Other technical matters referred to are the recent gunnery tests with H.M.S. *Monarch,* which enabled the younger officers and men to take part in live shell practice against a ship target and the provision of a stronger anti-aircraft armament, with up-to-date control instruments, in H.M. ships. The official return of fleets, published earlier in the month, discloses the fact that nearly all vessels on the active list have lately been equipped with numerous 3-pounder or 2-pounder Q.F. guns, each of the capital ships mounting nineteen of these weapons, the cruisers twelve to eighteen, and the destroyers six. Such guns ought to prove very effective against aircraft at any height from which bombs or torpedoes could be released with accuracy. Another item of interest relates to the course of training at the Royal Naval Engineering College, Keyham, which has been reorganized in accordance with the most modern ideas. It is hoped in the coming year further to develop the system of vocational training of naval ratings with the view to improving their qualifications for employment after leaving the service. This training will in future be imparted to men on foreign stations, as well as at home ports and in seagoing ships. The Navy has now parted with all the capital ships it was required to discard under the Washington Treaty. Two were sunk at sea, and the remaining eighteen, with a total of some 400,000 tons displacement, have been broken up by firms in this country. Finally, since the naval clauses of the peace treaty have been completely carried out, the Naval Interallied Commission of Control in Germany has been withdrawn.

The Singapore Base and Practical Naval Strategy

Engineering, 6 March, 1925.—In the debate in the House of Lords on Wednesday the government had no difficulty demonstrating that the Singapore Dockyard would represent a normal development of naval policy, and that although certain sections of opinion in Japan had felt some suspicion that the works at Singapore indicated a lack of confidence on our part in the peaceful intentions of our former Allies, in Japanese official and well-

informed circles the true nature of the situation was fully realized. The project of setting up a battleship base at Singapore is indeed an essential measure in an organized scheme of imperial defense and one may assume will be one of the subjects to occupy the attention of the Conference of Flag Officers now meeting at Singapore. The principal argument of those who have consistently advocated the plan of a new dockyard at this port is that the mobility of a modern fleet depends, in the last resort, upon the position of bases from which it can operate. Without a chain of bases connecting our Dominions and outlying possessions to Great Britain, an adequate naval defense of our colonies, or our essential trade routes, is impossible; and, unless a base is erected at Singapore, no British battle fleet can ever hope to operate in the Pacific. The argument is unanswerable, and it is worth while to investigate some of its technical implications. These fall into two divisions. First, what are the strategic possibilities of the Pacific theater; that is, if any power undertakes great military movements in the ocean, what will they imply? Secondly, what part will the base play in the defense of the imperial trade routes?

Overseas expeditions depend for their bare existence upon ordinary commercial shipping. No power can undertake them, unless it can withdraw the shipping necessary from ordinary commercial uses, and make good the deficit, either by intensive building or hiring neutrals, or both together. Fully equipped, modern armies absorb shipping to an extent which was not realized before 1914. In 1917, no less than 8,000,000 tons of British shipping had to be set apart for purely military purposes, and this enormous figure excluded ships which were carrying stores and essential supplies on government account. This, however, only shows the magnitude of the problem: the matter has to be examined rather more closely.

Analytical statistics have proved that, when the American expeditionary force was taken to France, each vessel employed on the service covered, on the average, 3,500 miles per month, allowing for the necessary stays in port at either end of the voyage; and that every man required two tons of shipping to carry him to the theater of war, and one ton per annum to keep him there. The distance that each ship could cover per month was based on the fact that, on an average, every vessel in the service completed six round voyages of 7,000 miles per year.

When these data are applied to the enormous distances in the Pacific we arrive at rather startling results. The distance from San Francisco to Manila is 6,220 miles; from Panama to Manila is 8,000 miles. The average round trip is thus about 14,000 miles, so that twice as much tonnage per armed man would be absorbed by a military force sent to reinforce the Philippines, as was taken up by the American armies in France. The figures would be at least four tons per man for the original expedition, and two tons per man per year for the necessary flow of supplies. Should the Philippines ever become the theater of a serious struggle, an army of 300,000 men would thus deflect 1,200,000 tons of American shipping from commercial uses before it could even be landed.

It is not necessary to go through the same calculation in detail for the Japanese. It will be enough to state the results; but, before doing so, it is necessary to add a caution. The shipping figures for the American expeditionary force were based upon the very important fact that the American armies were landed at well-equipped ports, which were ready to receive them. Each transport was able to cover 3,500 miles per month, because she was unloaded with the greatest possible rapidity. The absorption of tonnage due to port delays is very much greater if an expeditionary force has to be landed in hostile territory, against resistance. The port delays of the ships attached to the Dardanelles expeditionary forces were roughly double those of the transports employed in the French service. It can, therefore, be

assumed that Japanese transport or supply ships engaged in Pacific operations would not cover more than 2,000 miles per month. These purely technical considerations fully confirm the frequent declarations of Japanese statesmen—that they have not the slightest intention of ever undertaking an aggressive or adventurous policy. About 1,300,000 tons of shipping would be required to carry a Japanese expeditionary force of 300,000 men (a comparatively small force in modern warfare) to any possible objective. The country at present possesses some 3,600,000 tons of shipping; and she is so dependent upon foreign supplies that she could not possibly release one third of her total shipping for military purposes by cutting down imports. In war, when they would be enormously increased, she would be less able to do so than ever.

Similarly, these figures prove, once and for all, that the battleship base at Singapore cannot possibly be intended for any aggressive purpose. No British Government would ever dream of sending a military expedition to the Far East, simply because the country's resources do not permit of it. The enormous mass of tonnage necessary would have to be built specially, for only a portion of it could be withdrawn from commercial uses. To this would have to be added an immense fleet of colliers carrying coal to all the coaling stations along the route, for bunkering the transports. By enabling the fleet to concentrate in any ocean where the British flag flies, the base puts a sound brick into the structure of Imperial defense; but if any government ever tried to use it for a forward aggressive policy, economic laws, which are more powerful than Cabinet decisions, would put an end to the project.

Before any estimate can be made of the part which the base at Singapore would play in the defense of the Far Eastern trade route, it is necessary to determine to what kind of attack the route could be subjected. The experiences of the great war proved that distant communications could be attacked in two ways. First, trade could be dislocated by fast cruisers like the *Emden*, with sufficient speed to appear suddenly off great ports of shipment, and to outdistance their pursuers; or, secondly, it could be disturbed by prolonged operations, undertaken by slow, specially-fitted raiders of the *Moewe* type, or by submarines. It can be said, at once, that operations of the first type will probably tend to disappear from naval war. The German light cruisers only raided British commerce in the first months of the war, because they could not get home. Light cruisers are so needed for fleet work, and purely military operations, that no naval power will ever be able to divert them for commerce raiding; they would be too easily lost, and are hard to replace.

Operations of the second type are, however, possible and even easy. Almost any naval power could fit out twenty merchantmen of the *Moewe* type, and fill their bunkers with coal; but, as has been said, slow vessels like these are bound to operate against the open trade routes. They cannot be sent against nodal points, guarded by fast cruisers, which can run them down. None the less, seeing how easily and with what immunity, the *Moewe* and the *Wolf* raided our communications in 1915, 1916 and 1917, it is reasonable to argue that provision should be made for putting the whole of the Far Eastern trade between Aden and Singapore under escort, should the need arise. The very great allocation of force which this would entail, the accumulations of shipping at the ports of departure, and the need of keeping those ports immune from attack, while the convoys were being collected, all prove that naval facilities at either end of the line should be developed by docks, repair basins, warship anchorages, and additional harbor facilities. Singapore, the most exposed end, must, obviously, come first.

H.M. Airship "R-101"

The Army, Navy and Air Force Gazette, 28 March, 1925.—The design of H.M. Airship *R-101* is well in hand, and it is anticipated that the structure will commence to be assembled next July or August. It will be necessary to enlarge the shed at Cardington in order to accommodate the ship. A contract for this has been let, and the work has already begun. It is hoped that the ship will be completed ready for home trials by the end of 1926, allowing the first trial trip to India to be made at the beginning of 1927.

The approximate overall length will be 720 feet; approximate overall height, 140 feet, and the approximate maximum diameter, 130 feet. There well be seven engines, and the maximum h.p. per engine, 600. These engines will burn heavy gas oil fuel and are remarkably economical in consumption. On full power the ship will consume approximately 1,750 pounds of fuel per hour and a maximum speed of about seventy miles per hour is anticipated. The gross lift of the ship will be 155 tons, of which seventy-five tons will be available for fuel, water ballast, goods and passengers. On a commercial run of 2,500 miles, say to Egypt, twenty tons should be available for passengers and goods.

The propellors will be made of steel in order to resist tropical conditions. The fabric of the gas bags will also be made of a particular material capable of withstanding tropical conditions. The main part of the structure will be made of stainless steel. If the airship is used for commercial purposes, accommodation can then be provided for 100 passengers; separate sleeping accommodation being in the form of two berth cabins on a separate deck from the living and smoking quarters, and so forth.

Special arrangements will be made for increasing the stability of the airship as it approaches the mooring mast, in order to increase the safety of landing, and the airship will be kept in trim when riding at the mast by means of an automatic stabilizing device.

A shed will be erected in India so that any minor defects during the flight from England may be easily repaired so as to ensure the satisfactory operation of the ship on the return journey. Three mooring masts will be erected, one at Cardington, one at an intermediate stopping place in Egypt, and one in India, and the ship will normally be operated from these masts and only be put into a shed should the necessity for repair arise. These masts consist of eight-sided pyramidal structures made in lattice steel work. They will be 180 feet high, will be provided with lifts for the transfer of passengers and goods to the airship, and also will be fitted with the necessary winches, pumps, mains, and so forth, for landing the ship, and feeding it with supplies of oil, water and gas.

Experimental Work.—There are four main problems which past experience has shown should be solved before such a large airship as one of five million cubic feet capacity can be successfully constructed and flown.

1. It was shown from the case of the failure of *R-38* that it is necessary to obtain an accurate estimate of the aerodynamic forces which will be imposed on the airship under all types of maneuvers. Preliminary estimates can be obtained from experiments on models in a wind tunnel. This work for *R-101* is already well in hand at the National Physical Laboratory, and the preliminary results show that the form chosen for the ship has a very satisfactory low resistance coefficient. There is, however, a good deal of doubt as to how far results of the forces obtained on models can be legitimately applied to the full size airship. In consequence *R-33* has been fitted up with over 200 special orifices and the pressures which occur on these orifices during different flying maneuvers will be recorded simultaneously by electrical means on a number of special manometers which are being fitted in the ship for this purpose. The results obtained will be compared

with the figures which have been obtained on the model tests of *R-33*, and any discrepancy which is found will be taken into account in designing *R-101* from its model data.

2. When an airship maneuvers in flight it swings a considerable mass of air with it (this may be as much as sixty tons in the case of *R-101*), and this mass of air exerts reactive forces on the airship. In order to obtain some estimate as to the magnitude of this effect, *R-33* has been fitted with a special moving pointer which is followed by the helmsman in order to impose a prescribed motion on the rudders. The resulting motion of the ship in space is obtained by simultaneously photographing with a cinema camera a number of instruments fitted in the control car, and this again is checked by flying the ship over a camera obscura on the ground, on the table of which its motion is recorded. From the motion of the airship it is possible to estimate the effect of the mass of air which is moved with it.

R-33 has been completely refitted in order to carry out the experimental flights necessary to obtain the information referred to in paragraphs 1 and 2. Most of the instruments are ready, and it is anticipated that these flights will take place during January and February of 1925.

3. Not only is it necessary to have an accurate estimate of the forces which will be imposed on an airship in flight, but it is also necessary to ascertain the stresses which these will cause in each member of the structure.

The hull of a rigid airship is a very complicated structure indeed, and it is a very tedious and difficult matter to determine what these stresses are by mathematical means. As a result of a recommendation made by the committee which enquired into the loss of *R-38* a special panel of experts was set up to lay down a satisfactory basis for the stressing of rigid airships. This was carried out in 1922, and it is now necessary to test by experimental means the validity of their conclusions.

Three experiments are in hand for this purpose. Firstly, Cardiff University is testing the stresses set up in the members of a six-foot model of an airship hull when loaded in various ways. Secondly, a special device has been devised at Cardington which can be attached to either the girders or the wires of an airship, which can be made to record the stresses occurring in these members. This device has already been tested and shown to function very satisfactorily. Proposed experiments are in hand at Pulham on *R-80*, one of the existing airships, whereby the structure is loaded in various ways in the shed and records of the stresses in the different member are taken by the device referred to above.

Another airship, *R-36*, is undergoing refit at Pulham in order to make a trial flight to Egypt in the coming summer. This ship will be fitted with a large number of these strain gauges, and it is hoped that continuous records will be taken during the flight to Egypt of the stresses experienced by the various members of the ship.

4. It is certain that the operation of airships under tropical conditions will give rise to special problems quite apart from any question of the deterioration caused to the structure, gas bags, and so forth. Among other things may be mentioned as examples, the amount of super heating which will be caused in the gas, and also the irregular behavior of the ship when riding to mooring mast, under considerable fluctuation of temperature.

Thus, in addition to the measurement of stress referred to in paragraph 3, this fight of *R-36* will also be devoted to obtaining knowledge of these problems associated with tropical conditions.

Airship Policy

By the Secretary For Air, *The Army, Navy and Air Force Gazette*, 7 March, 1925.—When I left office a year and a half ago I had, on behalf

of the government, announced to the House that we intended once again to embark upon a policy of airship development. We were then in negotiation with a private company associated with the name of my honorable and gallant friend the Member for Uxbridge, Lieutenant Commander Burney. We went out of office, and the government of the right honorable and honorable gentlemen opposite took our place, and they set on foot a scheme different from that upon which we had formerly been engaged. It was a scheme under which there was to be a period in the nature of an experimental period, during which the government was to build one airship and the Airship Guarantee Company was to build another. When I went back to the air ministry I found that the situation had changed a good deal since I parted from it a few months previously. Many commitments had been entered into under the new scheme, running into several hundreds of thousands of pounds. The more the air ministry experts looked into the question the more clearly they realized the potentialities of airship development for purposes of Empire defense, that is for the purposes of carrying troops or even carrying airplanes under the control of the air ministry. Further, I think everyone who has been connected with the consideration of airship development has come to agree that it is necessary to insist upon safety above all things else, and, on that account, it is very important to have as much research as possible into the many difficult questions connected with airships. There was the additional fact that airship policy during the last four or five years has been subject to so many sudden changes and reverses that I was genuinely nervous lest a sudden new reversal of policy would plunge the whole question back into the melting pot and stop airship development altogether. It seemed to me in these circumstances that the wisest course was not to destroy what I may call the Thomson scheme, but to do what I could to meet the criticisms which I and other honorable members made against it last year, and to make it possible, for instance, to pool more easily the airship knowledge between the department and the company; to make it more possible to give the experiment a freer scope than it looked like having six months ago, and—still more important—to make it more possible for this experimental stage to develop into what I have always regarded as the main object of airship development: namely, a commercial airship line operated not by the state, but by private enterprise. That was the situation as it appeared to me, and that is the position as I see it today. If I may sum it up in a few sentences, what I desire in this initial stage of airship experiment is, first of all, that there should be as much research as possible into all those extraordinary, difficult and complicated questions which are connected with airships. But, after all, I think the House will agree with me that, after the disaster to *R-38*, and the disasters which overtook other airships during the war, the one thing that matters is safety and the avoidance of risk of failure. Therefore, I say, first of all, let us concentrate upon airship research. I say, secondly, let us give the experimental period the freest possible scope. If the air ministry has the best kind of design, let us have the air ministry design. If, on the other hand, the Airship Guarantee Company can produce a better design, I can say quite frankly to the House that what I want is the best design, from whichever of the two it may come. Thirdly, I want to see, at the earliest possible moment that allows for the consideration of safety, to which I have just referred, the development of this initial experimental stage into the commercial stage of a great airship line between this country and one or more distant dominions, operated, as I say—and let me make this as clear as I can—not by the state, but by a private company.

The State of British Shipbuilding

The Engineer, 13 March, 1925.—The announcement that orders for five motor ships have been placed by the Furness-Withy group with the Deutsche-Werft, a modern German shipbuilding company, has come as a shock to a country which has hitherto not only supplied all of its own needs in shipbuilding, but has built about twenty per cent of the ships belonging to foreign owners. The plight into which British shipbuilding had fallen was known all too well by those connected with it, but it required some such overwhelming evidence as the placing of this order to bring it home to the country at large. The announcement has been followed by widespread discussion in shipbuilding circles, in the press, and even in Parliament. At first there was a tendency to accuse the Furness-Withy group of unpatriotic action, but when the actual figures were more closely considered the justification of its action became manifest. Tenders were sought in Belfast, on the Clyde, and on the northeast coast. The lowest figures from any one of these centers amounted to £230,000 per ship; the German quotation was £170,000 per ship. The difference of £300,000 on the total order was too great to be disregarded, even on patriotic grounds, and dwarfed into significance the £50,000 more than the lowest German tender which the owners were prepared to give British shipyards if they would accept the order.

For various reasons, on which public attention has now been concentrated, shipbuilding costs in the yards of Great Britain and Ireland have reached a very high level. It has been stated, indeed, that had the whole of the wages bill for the construction of the hulls of the five ships now contracted for in Germany been eliminated, no British shipbuilder could have quoted for the contract with any chance of success. The shipowner has been placed in an awkward dilemma. He can order ships from home yards at what he regards as uneconomic prices; he can carry on with his existing fleet, some units of which are admittedly in the obsolescent stage, or he can place orders abroad. He has, so far, resisted valiantly the temptation to fill his requirements in foreign yards. It is true that a good deal of repair work has gone to Dutch establishments and that one or two orders for new tonnage have been placed in Holland, but the loss of this work has been tempered by the knowledge that the Dutch industry is to some extent financed by British capital and that the personnel is partly British. No such "flattering unction" can soothe our chagrin in the present case. The contract which has been placed in Germany must be accepted as providing definite proof that at the present time the British shipbuilder is unable to offer effective competition with German yards. These establishments and other continental yards have already deprived home shipbuilders of many orders from foreign shipowners, which in pre-war years represented twenty per cent of the total British output; but the invasion of the home field is the last straw. In the attempt to bottom the reasons for the very low tenders submitted by German yards a wide field of inquiry has been opened up. Some of the facts which have been made public during the past week have been common knowledge for a long time past to those who are familiar with shipbuilding conditions at home and abroad. It is known, for example, that the German employer pays somewhat lower rates of wages than British shipbuilders, that the working week in German yards is some hours longer, that many of the trades union restrictions, which add to the cost of work in Great Britain, are absent, and that there is a general willingness on the part of the workers to cooperate with employers in reducing production costs to a point at which work can be obtained. It is known also that the percentage of skilled to semi-skilled and unskilled men in German establishments—and in Dutch yards as well—is lower than in British establishments, and it is obvious that this dilution of labor must have an appreciable

effect in reducing the wages bill. It is certain, too, that German shipyards have the advantage of cheaper shipbuilding material than British yards, and, indeed, it was stated by Mr. McLean, the Labor member for Govan, in the House of Commons on Tuesday, that iron and steel plates manufactured in Great Britain are sold abroad at 30s. per ton less than the price quoted to British yards. Another Labor member of Parliament, Mr. Connolly, who is himself an old shipyard worker, directed attention in the House of Commons on the same occasion to some of the other factors which have entered into the placing of orders for British ships with German firms. He pointed out that the German shipbuilder is able to obtain loans free of interest for a period of three years, that subsidies to the amount of thirty per cent are contributed by German municipalities, and that this assistance is augmented by a contribution from the state, representing fifty per cent of the wages paid. On its side the British industry, hampered by the difficulties and restrictions to which we have already referred, has to bear an extremely heavy burden of taxation and rates. Mr. Connolly stated that local rates in some shipbuilding districts had risen to a point twenty-two and a half times above that at which they stood in the year 1914. In other areas the local rate, which was 12s. 6d. per workman in 1914, is £2 8s. at the present time. This comparison of the difference in British and German conditions—and there are other factors which might be taken into account—explains the difference of at least £6 per ton in the tenders submitted by British and German yards for the Furness-Withy contract. There is the further consideration that in the desire to obtain the contract the successful German firm quoted a closely cut figure. It has been suggested, not for the first time, and the Prime Minister has put the suggestion into concrete form, that an inquiry in which both employers and employed would take part should be made into the conditions which permit the diversion of orders from this country to foreign competitors. Mr. Connolly, who represents a Newcastle constituency, has expressed his willingness to discuss the position and to assist, as far as he is able, to put that great British industry on its feet. Sir George Hunter, in recent contributions to the subject, has invited the cooperation of the workers, and he has pleaded many times for a more sympathetic attitude on the part of trades unions in dealing with questions of working hours and conditions of labor. The need of cooperation has not, however, been overlooked by shipbuilding employers. At the present time a joint committee of the Shipbuilding Employers' Federation and the Federation of Shipbuilding and Engineering Trades is holding a series of conferences—the last took place on Tuesday at Carlisle—with the object of evolving improved conciliation machinery, and it is hoped that the next stage of the work, which is making satisfactory progress, may be a consideration of the offer made by employers to work out in cooperation with the trades unions a scheme for the automatic regulation of wages and generally to promote harmonious relations between employers and employed. It would only need an extension of this movement to bring under review the whole subject of hours and working conditions, and it is hoped that this may be the outcome of the proof now given that reforms which, without reducing wages, would bring about a decline in cost of production must be effected in the shipbuilding industry. It is true that within the past few weeks the shipyard unions have made applications for increases in rates of wages, but they have been definitely refused by employers, and it is hardly conceivable, in the light of the latest developments of the situation, that they can be persevered with. The hope is rather that a joint inquiry into the whole position will be undertaken and means found for bringing about a revival in an industry in which Great Britain has, until now, occupied a position of absolute predominance.

As an immediate remedy it is suggested that a number of ships should be built with financial guarantees under the provisions of the Trade Facilities Act, and Howden Hume, the president of the Institution of Engineers and Shipbuilders in Scotland, has, in a letter addressed to *The Times*, pressed on the government the need of providing work in the shipbuilding and allied trades by undertaking the maximum quantity of warship construction permissible under the terms of the Washington Treaty. If these plans are adopted a temporary stimulus will be given to shipbuilding, but the malady from which the industry is suffering, that of high production costs, will not be touched. A correct diagnosis of this disease and the application of sound remedies is what is needed, and concentration on this task must not be retarded by the employment of palliatives.

FRANCE

French Navy Notes

The Naval and Military Record, 4 March, 1925.—Steady and silent progress is being made ashore and afloat. Naval laboratories and experimental stations are ever at work, carrying out a well-thought-out program aiming at superior quality and efficiency that may, to a certain extent, make up for the unavoidable numerical shortcomings of the present. New weapons, long caliber guns, torpedoes, shells, aerial bombs of two main types are in the making, as well as new ship designs and flying boats on novel lines—paper achievements mostly, carefully put in reserve. With some delay, due to too great dispersal of the commands, the ships in hand are getting launched or completed. Within two days the 2,400-ton *Lynx* has been launched at St. Nazaire and the 1,500-ton *Tempête* at Nantes.

Important exercises are taking place in the Channel in the presence of Minister Dumesnil that have for object to test both the actual training of the Escadre du Nord and the practical worth of the defensive organization of the Normandy coast, that has been of late the object of much attention; and no wonder. The very fact that the Cherbourg arsenal and *port militaire* has no natural protection against bombardment from the high sea, and is, besides, vulnerable to air attack and menaced by the proximity of islands, has placed the Paris Admiralty in front of two alternatives: viz., either to relegate Cherbourg to the rank of a second-rate *point d'appui* to be used for auxiliary purposes only and under any favorable circumstances, or to retain it as *port militaire de première classe* and equip it in so thorough a manner that it may under any circumstances fulfil its obligations resulting from its remarkable and unique strategic position of vantage in the mid-Channel. It was felt it would have been something of an abdication and a moral defeat for the Paris Admiralty to publicly confess its powerlessness to fully utilize the advantages of Cherbourg, which under the new aerial and ballistic conditions can be made to adequately protect the whole Normandy coast and the northern part of Brittany.

Of course, from its vulnerability to attacks from air and sea, Cherbourg, to be more than a make-believe shield, must be very strongly protected and possess an effective radius of offensive action extending over hundreds of miles with a view to nipping in the bud any attempt at bombardment, for a bombardment, even in a mild form, might have unpleasant consequences. To prevent bombardments from the high sea by battle squadrons, the enemy would have to be detected, attacked, sunk, or repelled before coming within range—a mighty task, indeed, which would require numerous and efficient aerial and submarine flotillas, together with destroyers and gunboats, supported by battleships. Surprise attacks by submarines and fast cruisers and damaging enterpries by hostile minelayers would have to be guarded against. Last, but not least, aerial attacks would have to be expected by night and by day, both by hydravions and army machines, that can now fly over 1,000

miles (as recent experiments have shown) with two tons of chemical explosives; and to ward off a latent and deadly danger of that sort an enormous aerial force would be required, together with anti-aerial gun batteries and an extensive barrage and camouflage organization.

It would be exaggerating to say that those comprehensive conditions of an efficient defense are being fulfilled at the present moment. The able Admiral Docteur has under his command three coastguard battleships of 18,000 tons (much more in practice since recent modifications): viz., *Voltaire, Condoret,* and *Diderot,* with an obsolete armament of four 12-inch and twelve 9.4-inch guns, but that boast of an effective anti-submarine armored *caisson* that has since the war benefited from practical improvements embodying war data, and is proof against several torpedo or mine explosions, as conclusive tests have shown. These three *cuirassés,* ballistically of little moment save against the small German battleships of 13,000 tons, form the nucleus of a well-trained torpedo force consisting of over thirty *torpilleurs* and submarines, besides numerous counter-submarine gunboats of 800 tons and seaplane *escadrilles.* But this Docteur division, though its action would be strengthened by long-range supercannon shore batteries, is unfit for offensive duties, lacking both range and speed; in war-time it could only wait for the enemy in watch-dog fashion.

Now, partisans of the *Doctrine de l'offensive à outrance* consider as a waste of money and as naval heresy the piling up of costly defensive preparations in the Normandy peninsula. The *raison d'être* of the Cherbourg *port militaire* is not merely self-protection, which would be a negative, fruitless program, but Channel control in cooperations with Dunkirk-Calais and Ushant. The best, safest and most telling method in defending Cherbourg and the Normandy coasts is not to wait for the *bon plaisir* of the enemy, but to go for him wherever he be found and to nip in the bud hostile preparations for attack, by superior aerial and submarine readiness for war. Under novel conditions of chemical warfare so much harm may be done in a few hours by aerial attacks that it is impossible to altogether prevent, that it would be folly to place too many eggs in the much-exposed Cherbourg basket. Besides, war has changed; land fortresses are a thing of the past. Similarly, too great concentration of forces in naval strongholds will turn out to be weakness rather than strength. Minimize risks by dispersing the target—such is wisdom!

The French submarine force is on the point of receiving important additions that will increase twice over at least its present capabilities for offensive work, which are of no great order owing to the heterogeneous composition of the French underwater flotillas, the growth of which was hampered by the war. Whereas the American Navy counts over 120 submarines under ten years of age, the English over seventy, Japan an equal number, Italy over forty of remarkable homogeneity, France's present force only includes twenty-nine units (of which ten, of Boche construction, are of indifferent value) of a dozen different types, ranking from the 260 tons of the *Morillot* to the 2,000 tons of the *Halbroun,* the total tonnage of which hardly exceeds 20,000 tons, against over 120,000 tons and 70,000 tons respectively for the total American and British submarine flotillas. The "imperialistic" underwater force of France is thus seen to be in need of strengthening, considering the extent of French coastlines and colonies to defend. The forty-one Italian boats in service are mostly of small displacement (under 500 tons), but suitable for duties in the Mediterranean.

Of the six submarines of 1,150-1,440 tons in hand, the *Requin, Souffleur, Narval* and *Marsouin* are practically ready and ought to complete their trials in the spring and to join the flotillas in the summer, while the present year ought to see also the commissioning of the *Morse* and *Dauphin.* Much

is expected of these carefully designed boats, that have benefited by the lessons of the war and embody a series of practical improvements over the excellent *Fultons* of 850-1,100 tons and 18 knots, especially in the matter of all-round robustness and reliability, of radius of action and aptitude for prolonged surface cruising. The buoyancy exceeds twenty-five per cent; the shape of the hull and bows, that are yacht-like and overhanging, makes for a steady seagoing platform; internal arrangements are spacious and provide satisfactory conditions of habitability. Their Sulzer or Schneider-Diesels, designed with a view to reliability and economical consumption, will enable these submarines to keep the sea for forty days and to cover 7,000 miles at a stretch. Safe diving to a depth of over 100 meters will be permitted by their exceptionally strongly built hulls.

The six *Requins*—and, to a less extent, the ten *Fultons* (6,000 miles' radius of action) and the ex-German *Halbronn*—thus compose the ocean and colonial defense submarine force of France, fit to fight in any sea, in cooperation with cruiser divisions and colonial *points d'appui flotillas*, or with an Allied fleet.

The French *Requins*, it is noteworthy, are intended primarily for use against warships. Their torpedo armament is formidable, comprising ten tubes and sixteen torpedoes of 550 mil. altogether, likely to make an impression on the most thickly armored and bulged capital ship. On the other hand, they are but poorly suited to cruiser warfare and commerce destroying work. Their single 4-inch gun is intended for anti-aerial use; it is on deck, at low elevation, instead of being raised so as to be fought in any sea, as is the case with the gun armament in the British *L*, *K* and *X* classes.

This inferiority of our *sousmarins* has not escaped the attention of Paris experts. The British *X-1* type is being admired as the *premieur croiseur-sousmarin*, worthy of that name, capable of giving a good account of herself both under water and on the surface. With her four guns in roomy and high turrets at some six meters above the normal water line, but which could be fought with the deck awash, when the *X-1* would only present to an enemy a diminutive and wholly armored target, she could more than hold her own against a destroyer or an auxiliary cruiser and indulge in surprise bombardments against vulernable spots on the enemy coast at ranges of seven or eight miles. Under any circumstances likely in warfare, she will prove a handy and useful craft. Her advent marks among submarines a revolution similar to that which the *Dreadnought* brought in the capital ship class.

Vice Admiral Violette, who is expected to succeeded Admiral Dumesnil in command of the Toulon squadron, is a distinguished officer, fifty-six years of age. He was laureate of the *Ecole Navale* in 1886, was promoted to flag rank in 1919, after successfully exercising the command of the Milo patrolling flotilla, and as a rear admiral was for two years chief of a battle division in the Mediterranean. As Vice Admiral Chef de Cabinet to Minister Dumesnil, he took a prominent share in the elaboration of the naval program. He is a believer in air power.

GERMANY

Shipbuilding in Germany

The Engineer, 27 March, 1925.—The crisis which has gradually affected the whole world since the great shipbuilding activity in the years 1918 to 1920 is reported to have also manifested itself in an increasing measure in the case of the German shipbuilding yards during the past twelve months. The ship compensation law of February 23, 1921, which aimed at indemnifying the shipping companies for the losses incurred through the cession of their merchant fleets under the Treaty of Versailles, simultaneously placed

on these companies the obligation to allocate large orders to the native yards. It thus happened that when the fear of unemployment was being entertained in most of the shipyards in the world in 1921, Germany became so fully occupied with work as to be able to launch the record total of 621,000 gross register tons. In 1922 the tonnage still amounted to 526,000, whereas the entire output of all the German yards in 1913 was only 465,000 tons. In addition, the depreciation of the German currency brought about numerous orders for ship repairs to be executed at Teutonic yards, as no other country was able to turn out work so cheaply. The end of the period of inflation, however, arrested the term of great activity. The world crisis then attacked the German yards, and rendered it necessary for the adoption of state measures in order to ward off the evil. Under the circumstances, the ships launched in 1923 declined to 345,000 tons and to 151,000 tons in 1924, these figures not including the production of the yards at Dantsic.

Discussing the question in a German contemporary—*Deutsche Bergwerks Zeitung*—Professor Hennig points out that some 379,000 tons of new construction were on the stocks in Germany at the end of last December, and about two thirds of this tonnage were for foreign account, only about one third being for native shipping undertakings. In these circumstances, he considers that the rapid growth of the merchant marine which took place between 1919 and 1924 will probably give way to a much slower rate of progress. At the beginning of last July fifty-six per cent of the prewar merchant tonnage had been restored, the sea-going fleet having then reached a total of 2,856,000 tons, as compared with 5,098,000 tons in 1914. In emphasizing the possible future slackening of the rate of expansion it is mentioned that although about 130,000 tons of ships are under construction in German yards for native companies and a further 96,000 tons in England for German account, quite 100,000 tons of ships were sold by German owners to other countries last year in consequence of the unfavorable condition of trade. Concerning the recent grant by the German Government of a credit to the native shipyards, amounting to £2,500,000, in order to prevent unemployment, the professor states that this credit is subject to the payment of a rate of interest of four per cent in the first year and a rate of from five to six per cent in after years. The condition of the credit is that a similar amount of £2,500,000 is simultaneously rendered available from other sources for the purpose of new construction. If the total credit of £5,000,000 should be placed at the disposal of the shipbuilding industry, it is calculated that the sum will enable some 300,000 tons of new ships to be built.

Although not mentioned by Professor Hennig, a word may be said in conclusion in regard to the recent order placed by an English shipping company with the Deutsche Werft for the construction of five ships. It was reported by a London newspaper last week that the Deutsche Werft is owned by the Deutsche Werke, but if this statement were correct it would mean that the German Government had accepted the order indirectly, and had underbidden the prices quoted by English yards for the contract in question. As a matter of fact, the Deutsche Werke is a Reich company to which all of the state arsenals and similar establishments were transferred two or three years ago, whose share capital is held entirely by the Reich, and whoe directors have just asked the government to grant credits amounting to £3,100,000 in order to reorganize the undertaking financially. On the other hand, the Deutsche Werft, of Hamburg, was formed as far back as 1916, and was intended eventually to be the largest and most technically equipped yard on the European continent the leading shareholders being the Hamburg-American Steamship Company, the Berlin A.E.G., and the Haniel colliery-owning group.

JAPAN

Japanese Naval Construction

The Army, Navy and Air Force Gazette, 7 March, 1925.—Some interesting notes on Japanese naval construction which appear in the February issue of the *Journal* of the Royal United Service Institution are very opportune. They go to show what a serious position may arise if warship construction is suspended indefinitely in this country. So far as battleships are concerned, of course, there is no question of any rivalry, the numbers of this class being fixed for some years by the Washington Treaty, the disposal of the surplus ships under which was completed by Japan on February 9, when the battleship *Tosa* was sunk. It is in regard chiefly to cruisers, but also to destroyers and submarines, that the activity now being displayed merits attention. It may not be generally realized that since the Washington Conference was held, twice as many cruisers have actually been laid down in Japan as in Britain and America put together, while the number of destroyers and submarines put in hand, sixteen and twenty-four respectively, compares with two of each class for Great Britain and none of either for the United States. Granted that the latter powers have war-built flotillas as a reserve to live upon, as it were, each year sees such flotillas growing more obsolescent, and sooner or later the replacement problem must be tackled if the relative strength according to the battleship ratio fixed by treaty is to be maintained.

During 1924, according to the *Journal* notes, three more cruisers of the *Sendai* class were completed, bringing up the total of this class to eight, and leaving only one uncompleted. They are 5,570-ton vessels, armed with seven 5.5-inch guns, and designated for 33 knots. Three cruisers of similar type and speed have been laid down by Japan each year since the Armistice, and the only change to be noted since the Washington Conference of 1921 is that the tonnage has been advanced, first to 7,100 tons, in the *Kako* class, begun in 1922 and 1923; and then to 10,000 tons, in the *Nachi* class, begun in 1924. From the time of the Armistice to that of the Conference, Japan put in hand eleven cruisers, and thus more than kept pace with the United States in their building of the ten vessels of the *Omaha* type (8,500 tons). Great Britain began no cruisers during these three years. In the three years which have since elapsed, Japan has begun ten more cruisers—the *Yubari*, of a special small type; three of the *Sendai* class, just completed; four of the *Kako* class, of 7,100 tons, and two of the *Nachi* class, of 10,000 tons. This compares with five cruisers begun last year in this country, while in America none has been laid down in the period mentioned, although eight more have just been sanctioned. Dealing only with those actually built or building, the post-war cruisers total twenty-one for Japan, ten for America, and 5 for this country. If ships projected or authorized are added, there should be twenty-three for Japan, eighteen for America, and five for this country. As *Brassey's Annual* points out, Japan alone among the powers will have more cruisers in 1928 than in 1914. This indicates that she is doing more than is absolutely necessary for replacement purposes, and to this extent, therefore, there is some ground for the assertion that a new competition in cruiser construction has been started.

Turning to destroyers, Japan completed six last year, four of 1,400 tons and two of 900 tons, according to the *Journal*. Her strength is now 101, as compared with 205 British flotilla leaders and destroyers, and 309 American—the last-named figure being the result of the mass production of vessels in the states during the closing months of the war. There is room for considerable expansion here on the part of Japan before she approaches anything like a ratio corresponding to the 5-5-3 as against Britain and America fixed by the Washington Treaty for battleship strength. It should be noted, however, that the building of destroyers is proceeding systematically in Japan, but not in the other countries.

Japan's Navy Heads Deny Big Building

The New York *Times*, April 28, 1925.—Tokio, April 27.—"Unless a strong nation, such as the United States or England, should assume a competitive attitude, attempting to threaten us, there need not fear of a violation of the spirit of the Washington Conference," was the assertion made by the Japanese Navy Department today in refutation of the charge by Hector Bywater of the London *Daily News* that Japan's navy building program is forcing other signatories of the Washington Treaty into a naval race.

"Mr. Bywater is trying to create a sensation, hinting that Japan's auxiliary ship construction plan greatly endangers the national defense of the United States, but it is quite plain to those understanding anything of strategy that Japan's naval program does not menace America," the Navy Department said.

"Secretary Wilbur said last December that America's fleet would be superior to Japan's along the American coast but weaker than Japan's along Japans' coast. We are of the opinion that America's naval strength would not be inferior to the Japanese even along the Japanese coast. Relations between the naval authorities of Japan and the United States and England are peaceful. We want a fair, just and concrete form of agreement on armament reduction for the sake of humanity and international peace and we heartily despise those who are centered upon creating suspicion and hatred between powers.

"Mr. Bywater says it is unreasonable of Japan to make no attempt to reduce the construction of auxiliary ships in proportion to the reduction of her capital ships agreed upon in Washington. We point out according to the eight-eight program Japan emphasized the construction of capital ships, thus having a smaller amount of auxiliary ships than is practically necessary and not having a well-balanced fleet.

"Yet we even further reduced the auxiliary ships in sympathy with the spirit of the Washington Conference.

"According to the eight-eight plan Japan's program consisted of nine cruisers of 57,595 tons, twenty-eight destroyers of 29,025 tons and sixty submarines of 53,482 tons.

"After the conference this was reduced to eight cruisers of 68,400 tons, fifteen destroyers of 21,675 tons and twenty-nine submarines of 38,460 tons.

"The criticism which disregards the large number of American superclass destroyers and the decreased Japanese submarines and destroyers as shown above, and tries to stir up naval competition, must be regarded as being made for some private end. Furthermore, the comparisons which take place account only for those ships, the construction of which started or was approved after February 6, 1922, without reference to the many completed before that date, are fundamentally unsound. The following table shows the relative strength of the three great powers on January 1 of this year, the cruisers listed being less than seventeen years old, the submarines and destroyers less than twelve years old.

"Already Built—Japan, 95 cruisers and destroyers, together being 166,373 tons; 44 submarines, 34,084 tons.

"America, 304 cruisers and destroyers, 470,561 tons; 118 submarines, 77,349 tons.

"England, 253 cruisers and destroyers, 476,695 tons; 65 submarines, 57,058 tons.

"Under Construction—Japan, 21 cruisers and destroyers, 82,365 tons; 14 submarines, 23,895 tons.

"America, no cruisers or destroyers; 9 submarines, 11,928 tons.

"England, 6 cruisers, 51,850 tons; 3 submarines, 3,260 tons.

"Approved But Not Started—Japan cruisers and destroyers, 35,895 tons; 14 submarines, 17,755 tons.

"America, 20 cruisers and destroyers, 98,000 tons; 6 submarines, 10,820 tons—one, tonnage unknown.

"England, 7 cruisers and destroyers, 50,000 tons—one, tonnage unknown; 6 submarines, tonnage unknown.

"Total—Japan, 129 cruisers and destroyers, 284,638 tons; 72 submarines, 75,734 tons.

"America, 324 cruisers and destroyers, 558,561 tons; 133 submarines, 100,097 tons.

"England, 266 cruisers and destroyers, 578,545 tons; 74 submarines, 60,318 tons."

UNITED STATES

Battleship Annihilators

Editorial in the *Scientific American*, April, 1925.—In the long list of battleship annihilators, the airplane is the latest, and General Mitchell is its prophet. The work of annihilation has been going on for forty years. Periodically, enthusiastic and highly imaginative prototypes of the gallant general have sounded the knell of that huge, slow-moving, costly contraption, the battleship. Always the mastodon was to be killed by the midget. Always, the midgets were to be "built in swarms"; in swarms they were to "swoop down" upon the bewildered Behemoth; and, as he sank beneath the waves, a new era of naval warfare was to be ushered in.

Yet, strange to say, when the chosen experts of the three leading navies of the world gathered in Washington to arrange a mutual rating of naval strength, they selected, not the torpedo boat, nor the destroyer, nor the submarine, nor the fast scout, nor the swift battle cruiser, nor even the airplane, as the basis of strength. They selected the battleship!

And they made this choice because, although each of these several craft had, in its turn, been heralded as sounding its death knell, the battleship still held its supreme position as the backbone of the Navy and the final arbiter of battles; while the "annihilators" had fallen, automatically, into their respective, subordinate positions, as important auxiliaries to the fighting battle line.

The present hullabaloo over the airship-battleship question is strongly suggestive of earlier enthusiasms over cheap "kill-alls" in naval warfare. There was the torpedo boat—small, swift, hard to see, hard to hit, rushing out of the night or the fog, and delivering its deadly torpedo! The answer was found in the torpedo boat destroyer, larger, swifter, heavily armed, and able to keep the sea.

Then the destroyer itself was to succeed where the torpedo boat failed; but an effective answer was found in the rapid-fire, 5- and 6-inch anti-torpedo battery, each gun capable of delivering from six to ten armed shots per minute at the on-rushing craft.

Next among the annihilators was the submarine; but in the destroyer with its listening devices and its depth bombs was found the annihilator of the annihilator; and in the late war the grand fleet did not hesitate to sweep the North Sea, though at times its course was beset with the undersea craft.

And now we have with us the airplane; and, scorning the lessons of the past, its over-zealous advocates are singing the same old swan song and telling the bewildered public and its scarcely less bewildered Congress to consign our battleship fleet to the junk heap; and this for the reason that, at last, it is confronted with a real, honest-to-goodness, annihilator.

Well, we think not.

It was our privilege to witness the bombing of the German ships off the Virginia Capes. We saw a small, frail cruiser subjected to an all-day

attack by machines flying at a low altitude at which they would never dare to fly in actual warfare. The ship was anchored; she had neither man nor gun aboard. Yet is was late in the afternoon before she slowly went under. The battleship, also anchored and without defense, was bombarded all one afternoon. Next day she was still afloat and but little below her loadline, and it took some hours of further bombing to put her down. We were not impressed.

It is true that planes, bomb-sights and bombs have been greatly improved since then. But so has the anti-aircraft defense of ships. The airplane is a most valuable auxiliary in the makeup of a well-found navy. For patrol, for spotting, for scouting, for bombing and for engaging enemy aircraft it will be invaluable.

But it has not "sounded the death knell" of the battleship.

The "Saratoga"

Aviation, 20 April, 1925.—No more impressive sight has ever been given to aeronautical observers than the launching of the majestic aircraft carrier U.S.S. *Saratoga*. This latest product of naval architectural genius is not only the last word in ships but in its experimental features it will be a veritable floating aeronautical laboratory. Entirely apart from its relationship to aviation, the *Saratoga* is exceptional in its superlative characteristics. It has the greatest power of any ship; it has double the horsepower of the *Leviathan*. It is the longest ship. When launched it was more nearly completed than is usual with naval vessels, so that it was the greatest weight that ever slipped down the ways. Its commissioned personnel will exceed that of any battleship, one hundred eighty officers being required. Its 1,600 enlisted men will represent in variety of trades an expert crew such as was never before known afloat. With its sister ship, the *Lexington*, it will be the largest and fastest craft of its kind in the world.

It is interesting to recall at this time that it is due to the money subscribed by Japanese children that these carriers were allowed to the United States. At the time of the Limitation of Arms Conference, the British had three aircraft carriers, the French had an experimental ship and the *Langley* was building. The Japanese had none, but they had an armored cruiser that had been built partly by the pennies contributed by school childen. It was claimed by Japan's representatives that the scrapping of this ship was inadvisable owing to popular national sentiment, but that it could be made into an aircraft carrier, although the limitation on aircraft carriers under the treaty had been fixed at 27,000 tons. The best that could be done with this 45,000 ton ship in the converting process was a minimum of 33,000 tons. As the dimensions of the Japanese ship were about the same as our battle cruisers that were to be scrapped, our naval officers stated that the same change could be made with our ships. It was agreed by all the parties to the treaty that the conversion would be allowed and in this way the United States came to complete the two cruisers as aircraft carriers. It is one of those little bits of sentimental history that may have a marked effect on future naval warfare.

The cost of the *Saratoga* was originally intended to be $23,000,000 but by additional improvements this has been increased to about $45,000,000. This appears to be a large amount of money to put into an experimental ship particularly as there is no firm conviction among naval experts even as to what the future type of aircraft carrier will be. There appear to be two distinct views; one which favors the large tonnage ship the other believing that three ten thousand ton ships would have very decided advantages over the larger carrier. The cost of the three smaller ships would be about the same as the 33,000 ton *Saratoga*. The larger ship would have the advantage of speed, ability to maintain speed in heavy seas, a stable platform, and to

carry a large number of airplanes. The smaller ships would be able to fly their aircraft off the decks three times as fast as the larger carrier, and also to receive them back on board three times as fast. They would be three times less vulnerable to attack, and when lost, the deficiency in the fleet's air power would not be so great. While the flying platform is less stable it is thought that the smaller carrier will give a percentage of flying availability that would be satisfactory, for there is a question as to the efficiency of any carrier operating in heavy seas.

Three small carriers could cover much more sea area than one large ship. The smaller ships could carry more airplanes than the larger carriers. It will be noted from these differences which are naval opinions and not ours that there is much variance of thought in this new field of naval construction. One thing that can be regarded as certain, and that is that no effort will be neglected by the naval authorities to increase the air power of the fleet, they having come to a very real realization of the necessities of aviation as a prime requirement of any navy.

National Air Policy

Aviation, 30 March, 1925.—The following statement issued by Godfrey L. Cabot, president of the National Aeronautic Association is of extreme importance as it commits the membership of the Association to a very definite policy. It is the first announcement of policy that has been issued this year and therefore represents the views of the present executives who have undoubtedly sounded out the membership before making such an important statement.

Summarizing, the policy of the N.A.A. can be stated briefly as follows:

It urges the passage of the Winslow Bill.

It is opposed to a unification of our air services as proposed by the Curry Bill.

It believes that the expenditure of $433,000,000 by the government during the last five years has made America "very distinctly and emphatically first in the air," and that those who claim "inadequate results" are "unjust."

It blames smaller appropriations for our not having "quite as large an air force as England."

It believes that cooperation between the Army and Navy Air Services is "reducing to a minimum the duplication of effort."

It urges more bombing tests.

It asserts that "careful quantitative experiments" were made on the George Washington and the Navy accomplished more than was made public.

It urges a separate list for promotion of air officers.

It urges the "high command" to get into the air and that there be no repetition of "very competent fliers being placed under the command of grossly ignorant majors."

It urges the study of aerodynamics by the high command so that they can pass on technical questions.

It looks forward to the time when commander-in-chief of both armies and navies will direct those forces from the air using airplanes in clear weather and airships when weather is inclement.

It urges immediate construction of aircraft for this purpose.

It urges air committees in Congress.

Flying Course to be included in Naval Academy Curriculum

The Baltimore *Sun,* 6 May, 1925.—Washington, May 5.—Orders were issued today by the Navy Department providing that hereafter every graduate of the Naval Academy, who is physically qualified, shall be trained either as an aviator or observer.

To carry these orders into effect highly important changes in the course of instruction given midshipmen and equally important changes in the organization of the teaching departments at the academy is provided.

Three measures are proposed by the Bureau of Navigation to carry out the aviation training of the midshipmen. In the first place the department of engineering at the Academy is to become the department of engineering and aeronautics and the department of seamanship, the department of seamanship and flight tactics.

All graduates, in addition to their regular course in these departments, are to receive three months intensive training in ground and flight work and all flight work must be completed by graduates two years after leaving the academy.

The order made public today by Secretary Wilbur follows in part:

"The bureau proposes the following measures:

"The study of aeronautics to constitute an integral part of the Naval Academy course. To this end the department of engineering will become the department of engineering and aeronautics and the department of seamanship the department of seamanship and flight tactics.

"That all graduates be given, in addition to the course of the regular curriculum in the department of engineering and aeronautics and the department of seamanship and flight tactics, three months' special intensive instruction in ground and flight work, so that all graduates, according to their physical qualifications, may become qualified either as naval observers or naval aviators.

"To complete the flight work necessary to qualify each graduate as a naval observer or naval aviator during the first two years after graduation, which period is classed as the instructional period of junior officers.

"In initiating this instruction the bureau proposes:

"To commence with the class of 1926, approximately one half of this class, instead of making the Naval Academy cruise, commencing June, 1925, will be retained at the Naval Academy and given there, with details to air stations as may be necessary, three months' theoretical and practical instructions in aeronautical subjects, and during this period the physical qualifications and assignment for pilot or observer training will be determined.

"The other half of the class of 1926 to be retained, upon graduation, at the Naval Academy, for at least three months, to receive special instruction during this period toward qualifying for an aviation designation.

"The entire class of 1926, during the first class year (fiscal year 1926), will, under the department of engineering and aeronautics and the department of seamanship and flight tactics, be given instruction in aeronautics in the regular curriculum.

"All classes subsequent to the class of 1926 will receive instruction under the department of engineering and aeronautics and the department of seamanship and flight tactics during the regular curriculum and will be given three months' special instruction under these departments immediately subsequent to graduation."

The inclusion of aviation and aviation training in the curriculum at Annapolis was recommended by the special board, of which Admiral E. W. Eberle was chairman, which made a report on the influence of aviation development on the upbuilding of the Navy.

This board, in a report bearing the date of January 17, 1925, recommended:

"1. That the course in aeronautics at the Naval Academy be extended.

"2. That in the future graduates of the Naval Academy be assigned to aviation duty, for qualification as pilots or as observers, so far as the requirements of the service will permit, after they have completed at least two years' sea service.

"3. That the Navy Department establish a definite policy to govern the assignment of naval personnel to aviation duty, the length of such assignment and determine their obligations to their other naval duties."

The Bureau of Navigation, to which the board's report was referred, drafted the order providing that the study of aeronautics shall constitute an integral part of the Naval Academy course.

In its report to the Secretary the special board suggested that the "further development of military aviation for both the land and sea forces should be encouraged liberally in order that this very important element intimately connected with the operation of the army and the navy in the national defense may be brought to the high point of efficiency necessary to insure the national safety."

Secretary Wilbur adopted the view of the special board that education of American naval officers in the science of aviation was a proper step to be taken in view of the conclusion of Admiral Eberle and his associates that the influence of aviation "on naval warfare in the future undoubtedly will increase."

The order issued by Secretary Wilbur today removes aviation from the sphere of volunteer service so for as future naval officers are concerned. As training in the building, operation and navigation of airships is to become a part of the regular course of study at Annapolis, such assignments will become a matter of routine with naval officers who graduate at Annapolis, beginning with the class of 1926 and thereafter.

AVIATION

An All-Metal Flying Boat

The Engineer, 27 March, 1925.—The new type of all-metal flying boat built by the Rohrbach Metal Aeroplane Company, of Copenhagen, represents a trend in design which should be of especial interest to engineers. The system is being developed by William Beardmore and Company, Ltd., at the company's Dalmuir shipyard, where aircraft for both land and marine service, equipped with double and multiple engines, are now under construction. In the Rohrbach-Beardmore system the light alloy "duralumin" is used throughout for the construction of the boat, no fabric being employed. The constructional principles adopted are similar to those in use for bridge and shipbuilding work, and the structure is built up of riveted girders and plates which makes it possible to employ larger wing-spans (see Fig. 1) and higher powers than have hitherto been employed for flying boats of this class. We believe also that it is the first time a flying boat of this type has been fitted with collapsible masts and sails. As shown (see frontispiece to Professional Notes) the boat can be rigged with sails in a short space of time, which greatly increases control in the water under bad weather conditions with a corresponding economy in fuel. The frontispiece will, together with illustrations herewith, serve to indicate the main features of the design. The flying boat is of the monoplane type with cantilever wings arranged at an enhanced dihedral angle. A rectangular-shaped fuselage to which the wings are secured forms the hull of the ship and metal stabilizing floats, which give further support to the machine on the sea, are fitted. Above the wings and raised clear of them by metal struts are the engines—an arrangement which, we learn, enables maneuvering to be easily carried out with only one engine running. The following are some of the leading dimensions of the boat: Span over wing tips, ninety-six feet, nine inches; overall length, fifty-four feet, and overall height, fifteen feet. The weight of the machine when fully loaded is 8,140 pounds, which gives with a useful load of 4,400 pounds a total weight fully loaded of 12,540 pounds. At ground level the machine is designed for a speed of 124 miles per hour,

FIG. 1. FRONT VIEW OF THE FLYING BOAT

while it is capable, we are informed, of flying to a height of 13,000 feet and is designed to fly without losing height when loaded to three-quarters full load and with only one engine running.

The engines which so far have been fitted to these boats are of the Eagle IX type, each having twelve cylinders with a bore of four and a half inches and six and a half inches stroke. When running at a rated speed of 1,800 revolutions per minute the motors are designed to develop a total of about 720 brake horsepower. Some of the main constructional features are as follows:

Wings and Supports.—The characteristic feature of the three-part wing construction is illustrated by Fig. 2. A center member of box section built up of "duralumin" plates, channels, angles, with internal lattice bracing, and a stressed skin which helps to carry the main load. The scantlings are thicker near the hull and decrease in thickness outwards from it. The wing girder is secured to the hull structure by steel bolts (see Fig. 2) on its

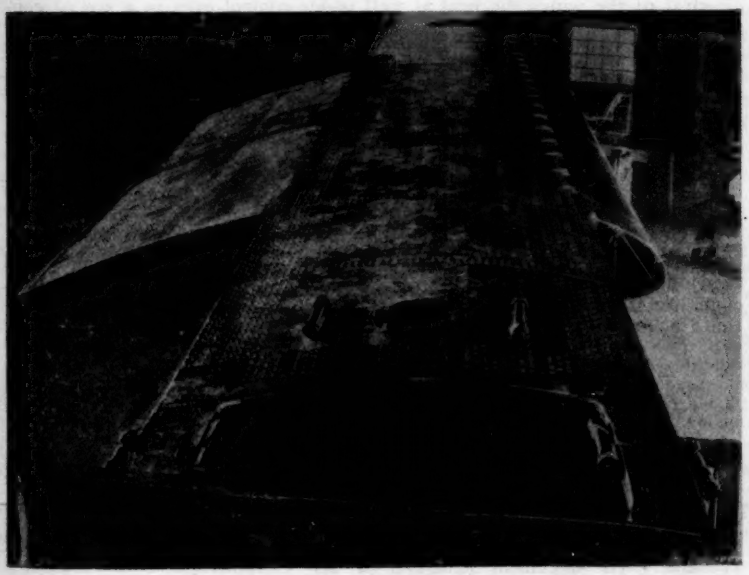


FIG. 2. VIEW ALONG ONE OF THE WINGS

upper and lower surfaces, which are supplemented by diagonally placed bolts and straps on the sides. The wing is so strong that the crew can safely walk about on its surface from end to end; a feature which is of considerable value in tying up or other sea work. To the center wing girders there are attached leading edge and trailing edge section boxes, which are light in construction and are hinged so that the interior surfaces can be examined and re-varnished if necessary at desired intervals. The auxiliary stabilizing floats (see Fig. 1) are attached below the wings on either side of the hull and are secured to hull and wings by struts.

When landing from the sea a beaching trolley shown in Fig. 1 is employed, which gives support to the wings at a point outside the floats. The trolley consists of two pairs of broad-rimmed wheels with light turret supports and guy rope connections, which are secured to the under surface of the wings during the period that the beaching trolley is in use.

Main Hull and Fuselage.—The hull proper is entirely made of light alloy and is generally rectangular in section, with a specially stepped under surface, the shape of which has been determined by an extensive set of tank experiments. It is divided into water-tight compartments by bulkheads with closing doors of an inverted pear shape and is designed so that the machine will float with any two compartments flooded. The cockpit is placed well forward of the wings, with glazed observation windows. At the extreme stern of the fuselage there is a built-up turret, which supports the tail planes. Attached to the upper part of the hull and the wings are the motor supports, which take the form of hollow metal struts and carry the motors and propellers clear of the wing structure.

The arrangement of the engines gives considerable flexibility when maneuvering, even with one motor in operation, and tying up against buoys, has, we are informed, been smoothly and successfully carried out. Both at sea and in the air the controllability of the ailerons has proved to be singularly effective, while by means of the side lateral floats and the high dihedral of the wings the boat is well under control even in a sea of considerable magnitude. Generally speaking, the opinion which has been formed as the result of the tests so far carried out is that the machine described constitutes a remarkable advance in flying boat practice. The machine, it is claimed, is also a successful example of the application of the high wing loading theory, which opens out such an enormous field for the extended use of aircraft and makes possible flights up to a range of 2,000 miles without the necessity of landing.

MERCHANT MARINE

Stanley Dollar vs. Pacific Mail

Editorial in *The Nautical Gazette*, 4 April, 1925.—The Shipping Board need offer no apology for accepting the bid of R. Stanley Dollar and associates for the five *President* ships now operated by the Pacific Mail Steamship Company between San Francisco and the Orient, neither is it incumbent upon the four of the seven commissioners who voted for the acceptance of the offer to make any explanation of their action. Obviously, they were actuated by good business judgment and had at heart the best interests of the American merchant marine, for, from a straight business point of view, the cash offer of Stanley Dollar is a better proposition than the "stock payment" plan submitted by the Pacific Mail, and any business organization would have made a similar decision had it stood in the board's shoes. It is only natural that the Pacific Mail should feel peeved over the rejection of their offer, but if they are really anxious to get some of the board's *President* ships there are others, equally as good as those just sold, still available. The argument advanced by Mr. Chamberlain, counsel for the Pacific Mail, that the outright sale of the ships to the Dollar interests is

a heavy blow to the national defense is weak inasmuch as the government, in the event of a national emergency, can commandeer the ships from the Dollar interests as readily as from the Pacific Mail. Neither is there any weight in Commissioner Benson's contention that in accepting the Dollar offer the board violated the Merchant Marine Act. On the contrary, in selling the vessels the board has followed the terms of the act, which stipulates that the government's ships shall be sold to private American interests, and in selling the *President* ships to Stanley Dollar the board has come one step nearer to its withdrawal from the shipping business.

It is inconsistent for Mr. Chamberlain to criticize the terms of the sale because they do not impose any obligation on the part of the buyer to keep the vessels in the transpacific service after five years. If in that length of time the Dollar interests cannot make the service pay, then they would be justified in abandoning the experiment; but if the service does turn out to be profitable, then they will undoubtedly maintain it. This is precisely what the Pacific Mail or any other company would do at the end of the period of guaranteed service. Chairman O'Connor drew a clear picture of the situation when he said: "If the board accepted the Pacific Mail Steamship Company's bid, it would be in the position of a man who offered a race horse for sale to the highest bidder who would promise to keep the horse racing on the track. The Pacific Mail offers to buy the horse and pay the greater amount of the purchase price for him out of the purses he might win on the track. If no purses are won, then the horse will not be paid for, but will be returned to the Shipping Board in a run-down or crippled condition. The Dollar company offers to buy the horse and pay for it out of his own pocket." The period of guaranteed service is of minor consideration, for if the service should not prove to be profitable and is abandoned the board, under the Dollar offer, will at least have secured payment in full for the ships, but under the Pacific Mail's offer the service would be discontinued, the ships thrown back on the board's hands and the board would have nothing to show except a small amount of cash and a block of stock. We do not place any weight upon the ruling that the board was precluded from accepting the Pacific Mail's bid on legal grounds, for we are convinced that the plan is perfectly legal. Such a scheme would be acceptable were no other form of offer submitted, but it cannot stand up alongside a straight cash bid, and the board's business judgment could permit no action other than that of accepting the Dollar offer. Both the Shipping Board and Stanley Dollar are to be congratulated.

Past Achievements and Future Plans of the Fleet Corporation

By Leigh C. Palmer, President, Fleet Corporation, *The Nautical Gazette*, 21 March, 1925.—The World War worked a revolution in the attitude of our people toward our merchant marine; it brought a sudden realization of what it meant to them to be without the means of ocean transportation for essential supplies and for the marketing of their products. Since then they have become increasingly impressed with the fact that we must have our foreign trade largely under our own control and, therefore, that we must have a commercial fleet sufficient for our needs in time of peace as well as for national emergencies. Today the question is not whether or not we will have a strong merchant marine, but only how we may best accomplish our purpose.

It is not remarkable that our people in general for more than half a century failed to appreciate the high importance of the merchant marine. That was only to be expected in a country in which the great majority of the people had no direct interest in foreign trade and little or no knowledge of the part that ocean commerce plays in the national life.

Our domestic commerce has been so large and has so nearly monopolized the public interest that until recently the true significance of foreign trade generally has been overlooked. Even our business men, men whose interests are more or less directly involved in international commerce, have been slow to appreciate our needs in this respect.

In the matter of exports, it is pretty well understood that the national prosperity is dependent upon our finding a market for our surplus products, though that surplus probably does not amount to more than ten per cent of our production. The manufacturer, the farmer, the factory hand—practically everybody engaged in production is directly concerned, and realizes that the loss of foreign markets makes for hard times at home.

As for imports, it is less widely understood how dependent many of our great industries are upon the unrestricted inflow of essential raw commodities, such, for example, as rubber, which has a thousand uses in our daily life, only the most prominent of which is automobile tires; and certain metals and ores which are essential to our industries but which we do not produce at home. Then there are such commodities as coffee, tea, tropical fruits, silk and many others which, though less essential, are almost necessary to the comfort and contentment of our people.

The outstanding fact is that no country, however rich in resources, is or can be self-sufficient, but must look beyond its borders for the commodities it lacks and for markets for the surplus products of its industries.

No country vitally dependent on international commerce for its prosperity and progress can afford to rely unduly upon others for the handling of its supplies and products since these others are usually its rivals in the world markets.

So long as we were producers mainly of foodstuffs and raw materials, we could afford to let alien buyers send their own ships for our products, and, historically, this is a normal shipping condition. But our unrivaled facilities for production, the high efficiency of our labor, and the skill of our executives have brought about a great change; we have become a great manufacturing nation as well as a producer of raw materials, and the consumptive capacity of the nation is already exceeded by its capacity for production. Unless markets abroad for our surplus manufacturers and other products can be kept open to us, production would have to be curtailed, and that would spell economic disaster.

It is obvious that if access to foreign markets is controlled by alien interests, they have it in their power to minimize the advantages of American products and in a large measure our exports from successful competition with the products of other countries. The position of a great industrial country without an adequate merchant marine has been well likened to that of a merchant who would depend upon a competitor for the handling of his supplies and deliveries.

In the Merchant Marine Act of 1920 Congress, in unmistakable language, declared "that it is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States. . . . .

This is our national policy, and it is significant that no political party, no section of the country, no important element of public opinion has voiced any opposition to it. Probably no act of Congress has been more favorably accepted.

A year ago, the active fleet comprised about three hundred fifty vessels operated by forty managing agents. Many of these operators had too few vessels to carry their overhead economically; many were unduly restricted

in the number of ports served; some of the services overlapped and in effect were in competition with each other at Government expense; all of which created an unbusinesslike situation generally. Obviously, a readjustment was imperatively necessary and this the Fleet Corporation undertook to accomplish by consolidating overlapping or conflicting lines and forming a single comprehensive line on each route. While our purpose was not fully realized in all cases, the program in general has been carried out with excellent effect, and in due time further progress will be made.

In these consolidations every effort was made to obtain a combination of the organizations of the managing agents concerned in order to retain experienced operating personnel and to avoid eliminating any managing agent who had renderd good service to the government and who was a potential purchaser of Shipping Board tonnage.

A consolidation permitted the withdrawal from service of the least efficient vessels, and therefore resulted directly in important economies. It placed a larger fleet in the hands of a single agent and gave him a wider range in which to operate, which resulted in a desirable flexibility of service, enabled him to route his ships to better advantage, shortened the time of ship's voyages and materially decreased operating expenses without curtailment of useful service. Another reason for such reorganization, apart from placing the lines on a better business footing, was the immediate necessity of making the best possible disposition of the smaller number of vessels that the reduced budget permitted us to operate. Furthermore, in order to assist in the reduction of taxes and in furtherance of our purpose ultimately to dispose of the lines of private ownership, it was essential to place the lines on the most economical basis practicable.

If we develop each of our lines to the point where it can be compared in efficiency and economy of operation to similar lines under efficient private management, we can accomplish several things. The best of them, those which can show a profit, will become readily saleable to private American operators. A second group of lines which probably cannot be made profitable under government ownership will show results which will justify private operators in taking them over, since it is not to be doubted that the private owner has advantages in the way of favorable business connections and in freedom of operations that are not available to a government organization. A third group of lines would remain for which there would be no purchasers, but we will have ascertained through experience the character and amount of government aid that such lines would require in order that private interests might be able to purchase and maintain them in competition with foreign-flag lines.

The efforts of the Fleet Corporation are being directed not only toward the improvement of the lines but also to the many other matters in which it finds opportunity for reduction of expenses without impairing efficiency. We are reducing stevedoring costs materially through new and more favorable contracts. Important economies in fuel consumption have been realized through the education of the ships' personnel and the institution of a system of competition. Most important of all, perhaps, has been the establishment of a budget system by which our disbursements are governed in accordance with the usual business practice. Thus in many respects the operation of the government fleet has been placed under the control and checks of an efficient commercial administration. However, there is yet much to be done along this line.

In consolidating the services none of the essential trade routes was abandoned, and there has been little reduction in the number of voyages for the year. On some of the routes which are highly competitive our services will be maintained with a view to giving only such frequency of sailings as may be necessary to protect American commercial interests and to hold our position in the trade until conditions improve. As trade conditions improve

and better freight rates are obtainable, the service can be gradually expanded to meet additional demands, but additional tonnage should not be put on with a view to maintaining an artificially low scale of rates, since that in effect would be giving a subsidy to shippers at the expense of the merchant marine and would prevent the lines becoming self-sustaining and, therefore, saleable. Such a policy would kill the merchant marine.

For the fiscal year ended last June, the Fleet Corporation expenses exceeded its revenues by $50,000,000; during the current year the loss has been reduced to about $36,000,000; and for the next year, beginning July 1, it will be further reduced to $28,000,000 at most. That is, over a period of thirteen months from June of last year to July of this year, the Fleet Corporation, with the assistance of a number of the managing operators, has improved and is improving the operating efficiency of the fleet so that the reduction of losses will be $22,000,000 per annum. This has been made possible by the reorganization of the Fleet Corporation lines and services to secure improved operating efficiency, by the reduction of general administrative expenses and by the elimination of much waste and extravagance. There is more to be accomplished along these lines.

The reduction this year in the total number of voyages has been small and has been made without sacrifices of useful service and with the gross revenue remaining practically constant.

In the past twelve months our general administrative expense has been cut about $1,250,000, of which $1,000,000 was in salaries alone; and further drastic reductions are continuing. The reduction in personnel is largely in consequence of our policy of placing more and more responsibility upon the private agencies through which our lines are operated and thus reducing the amount of detailed supervision exercised directly by the Fleet Corporation.

I do not wish to leave the impression that economy should be the one aim. Taking the Merchant Marine Act of 1920 for our guidance, we purpose to do all in our power for the development of a strong and permanent merchant marine to keep our country in close touch with the world markets, to carry a fair share of our ocean commerce, to protect our industries from exorbitant or discriminatoy ocean freight rates, and to be a potential arm of the national defense. But I feel that I cannot too strongly stress the point that efficiency with economy is the only basis on which we can hope to realize these objectives. A business structure built on the wasteful and extravagant use of public money will collapse sooner or later, whereas if it developed on sound business principles, so far as is possible under Government control, it can be expected to endure and to appeal to the purchaser of tonnage for private operation.

The general conditions throughout the shipping world continued depressed during the past year, but there are signs of improvement here and there which afford some encouragement. The depression has been due solely to the law of supply and demand, there being too many ships in the world for the tonnage of cargo to be moved. This condition is universal; but our own merchant marine, operating on a comparatively high price level, suffers from this condition more than its foreign competitors. Owing to the difference in operating costs, when foreign vessels are breaking even ours are losing.

The world surplus of ships is being gradually reduced through the scrapping of obsolete vessels and the gradual absorption of the idle tonnage in the trades, while there is comparatively little new construction. But even under the general adverse conditions of the past year several of the Fleet Corporation lines are now improved to such an extent as to attract the favorable interest of purchasers, and it would take very little further improvement in rates and cargo, with continuing reduction in unnecessary expenses, to bring others of our lines to the same condition.

The handicap under which American ships operate in competition with foreign vessels is due principally to higher wages and capital charges. The American wage scale is over fifty per cent higher than that of our principal competitors. This applies not merely to the salaries and wages of officers and crews of vessels, but also to all other items of expense incidental to ship operation, both ashore and afloat, in which wages is a factor, such as repairs and administration, and this condition probably is one that will always be with us.

Under ordinary circumstances vessels built in this country cost at least twenty per cent more than similar vessels built abroad. Since interest, depreciation and insurance are all based on this cost, the capital charge on American ships is correspondingly higher than that of our competitors. At present, however, this capital charge differential has little if any bearing on the situation because American operators are able to purchase from the government efficient vessels of the ordinary cargo types at world market prices. Under certain circumstances vessels may be purchased at much less than the world market price, provided the purchaser agrees to undertake the maintenance of prescribed services for a period of years. Thus the reduced capital charges largely offset the handicap of higher wage costs.

It is very advantageous to the government to follow a liberal sales policy and take an immediate loss on ships rather than maintain them in service at a greater eventual loss. Further, it is one of our prime purposes, under the Merchant Marine Act, to build up regular lines with a view to disposing of them to private citizens who will undertake to maintain them for a period of years at least. This is an entirely different matter from that of selling individual ships for unrestricted operation. The purpose is to find purchasers who will not only take over the vessels but will guarantee the operation of those vessels under certain conditions, come what may and regardless of any loss incurred. To sell ships with a guarantee of operation attached, it is obvious that a lower price must be asked than that at which the ships would be sold for operation wherever their owners desired. A concession in price must be made to offset in some measure the risks involved.

As for fixing the period of guaranteed operation for a certain number of years, the idea is that if an operator can meet his obligations for that length of time, he will have acquired such a firm footing in the trade and such valuable experience as will enable him to continue thereafter indefinitely; also, we are expecting considerable improvement in shipping conditions during the next few years and this will make it practicable for those established in the business to carry on and prosper. All things considered, it is good business for the government to make such sales whenever purchasers with the necessary enterprise, courage and resources can be found.

It is gratifying to note the steadily increasing good-will of our shippers toward our lines. Formerly, when our services were regarded as of an emergency or temporary character, there was an obvious and natural reluctance on the part of shippers to break connections with foreign-flag lines which had been giving them fair service and to give their business to our lines; but lately, since it has become generally realized that American services are of a permanent character, that they are to be maintained continuously, either by private operators or by the government until private operators take them over, and that these services are equal to those of our competitors, shippers have been giving us an increasing share of their shipments. Similarly, as the high quality of our passenger-ship services has become more widely known, our travelers are transferring their patronage to our lines. So we are justified in expecting that Americans will increasingly exercise the favoring spirit toward our ships as foreign nationals favor theirs. Nothing is more important than this in the development of our merchant marine.

An Airplane Mystery

The Washington *Post*, 13 May, 1925.—The fighting in Morocco between French forces and the Riff tribesmen is said to be of the most modern description. Trained artillerists are directing the fire of the Moors, while Marshal Lyautey is massing 100,000 French troops to crush the enemy at one blow. Machine guns, tanks and airplanes are reported to be in use on both sides.

France is the strongest air power in the world. She has over 1,300 airplanes in actual service and can command many more if necessary.

If air force can easily annihilate navies and forts, as has been claimed, why is it that France sticks to slow military methods in fighting the Moors, instead of quickly destroying them with airplanes?

Is it possible that there is a "joker" somewhere in the practical use of airplanes? Are airplanes still in the experimental stage so far as effectual bombardment on a large scale is concerned?

In Mesopotamia, when the natives become unruly, British airplanes go out and strafe them with machine guns, and the trouble is quickly over. Why the Riff tribesmen are exempt from the same treatment by French airmen, is a mystery. The cost of the proposed military operations by France will be very great, and the campaign will be slow and arduous. The public has been taught to believe that airplanes are ready to supplant armies for such work, with increased effectiveness and less expense. Evidently, however, the French authorities are not willing or able to employ an airplane army against the tribesmen. It would be enlightening to everybody if the true reason for nonuse of the great French air force were disclosed.

CURRENT NAVAL AND PROFESSIONAL PAPERS

"Executive Influence in Determining the Military Policy of the United States," University of Illinois, *Studies in Social Sciences*, June, 1924.

"Battleship or Airship," Commander A. D. Turnbull in *Current History*, April, 1925.

"Improving the Properties of Aluminum Alloy Castings," *Engineering*, March 13.

NOTES ON INTERNATIONAL AFFAIRS

FROM MARCH 23 TO MAY 7

PREPARED BY

PROFESSOR ALLAN WESTCOTT, U. S. NAVAL ACADEMY

JAPANESE VIEW OF PACIFIC MANEUVERS

AMERICA'S PACIFIC MANEUVERS.—By Captain Mizuno Hironori. Translated from the *Chuo Koron* (a Tokio monthly) for the Anglo-Japanese *Weekly Chronicle* of Kobe, February 19, and reprinted in the *Living Age* of April 11.

[The author is a well-known naval officer who has been placed on the retired list on account of his liberal views.]

America's grand naval maneuvers were at length started in the early part of January. In point of area and duration they are entirely unprecedented, for they are to be conducted over the whole region of the Southern Pacific, extending to Australia and New Zealand, with Hawaii for center, and are to last for a period of six months. Almost all the vessels of the American Navy, big and small, exceeding one million tons in all, will participate in the exercises. It is evident that the cost must reach several scores of millions of yen.

Considering that the Pacific has been specially chosen for the seat of the maneuvers and that Japan is the only nation on the Pacific seaboard that is capable of engaging the American fleet in naval war, it is hardly necessary to say that the maneuvers are being conducted with Japan as the imaginary enemy, for it would be idle to suppose that the American fleet is at so much pains and expense with reference to such practically navyless nations as China, Australia and New Zealand. But it would be improper to jump to the conclusion that America therefore regards Japan as an enemy. The fact is that as an imaginary enemy is essential to the determination of the scope or standard of a country's armament, so the clear conception of a hypothetical enemy is essential to render maneuvers really effective and useful. Before the Russian War the maneuvers of the Japanese Navy were located chiefly in waters west of Japan and the Sea of Japan, whereas since then they have mostly been in the Pacific. Japanese naval maneuvers with the Bonins for center would differ in nothing but size from the great American naval exercises that are being conducted with Hawaii for their center.

But as the great naval maneuvers of Britain and Germany, who were imaginary enemies before the war, used to irritate the nations involved, so today many Japanese are offended at the present American maneuvers, which they regard as a demonstration against Japan. Indeed, some of our militarists who are not favorably disposed to America are using the incident for anti-American propaganda and to show the necessity for increasing armaments against America. If Americans really love peace as much as they profess, they should, out of moral scruple, curtail to some extent

exercises that are so liable to engender misunderstanding or unpleasantness, though, logically speaking, Japan has no right to demand of America that the maneuvers be stopped, nor is America under any obligation to stop them.

It is interesting in this connection to compare the relative strength of the American and Japanese fleets and their respective locations in the possible event of a declaration of war between the two countries. By the Washington Agreement, the naval ratios between America and Japan up to 1932 have been fixed at five to three so far as capital ships and aircraft supply-ships are concerned. No arrangements have yet been made fixing the ratios of subsidiary ships. But, America must insist on maintaining in this respect the same ratios as in the other, so that the relative strength of the American and Japanese fleets must on the whole stand at five to three. As to the location of the belligerent fleets on the outbreak of the war, it is safe to suppose that the first moves of the war would find Hawaii in occupation of the American fleet, for should America be a member of the League of Nations, war could not be begun until a period of from three to nine months had elapsed after the reference of the dispute to arbitration; and even if she were still outside the league she would have to agree to the league's advice for reference, in which case the same interval as above would have to elapse after the reference and before the starting of hostilities, unless she were prepared to fight all the members of the league as provided in Articles Twelve and Seventeen of the League Covenant.

This interval of from three to nine months before the commencement of hostilities would suffice for America to put her whole fleet in fighting-trim and to send part of it around to Hawaii, without another power being able to lodge any protest against the course, since Hawaii is American territory.

With the American fleet in occupation of Hawaii, four thousand miles away from Japan, it would be reckless or immensely hazardous for the inferior Japanese fleet to attack it, and nothing short of divine intervention would enable Japan to capture Hawaii with her naval force. The opposing fleets would thus have to remain the one at Hawaii and the other at Yokosuka, glaring at each other, as the party that made the first move would be a loser by it. In the meantime aerial attacks on towns would be attempted on both sides. Coasts would be bombarded by cruisers. The Philippines might be occupied by Japanese troops. But these subsidiary actions would not affect the general situation unless an event such as the razing of Tokyo to the ground occurred. As for the occupation of the Philippines, it would be a mere waste of labor and lives, because if Japan were defeated they would be recovered, while if Japan won the war they would pass under her rule even if not occupied. Even supposing that some chance enabled Japan to capture Hawaii, the distance between Japan and Hawaii being about twice as great as that between Hawaii and America, it would be extremely hard for her inferior naval force to protect regular supply-convoys across so great a distance. As for operations on a large scale beyond Hawaii and against the American continent, it may be confidently stated that they are well-nigh impossible. But the occupation of Hawaii by Japan, while from a Japanese point of view it would mean only the change from glaring at each other between Yokosuka and Hawaii to the same operation between Honolulu and San Francisco, would seem to America like a sword pointed at her very heart.

Therefore, with Hawaii safely in her occupation, America has nothing to fear from the Japanese Navy, and the present maneuvers are quite justifiable so long as they aim at studying how to defend Hawaii in time of war. But, according to report, the plan of the American Navy contemplates sending a greater part of its fleet to Australia and New Zealand after the defensive maneuvers near Hawaii have been completed, in order to carry on combined maneuvers with the Australian fleet. The intended voyage of the American fleet has no doubt a diplomatic meaning: it is

designed to promote amity between America and Australia. But it may well irritate the feelings of the Japanese people, because the naval visit will be made as a continuation of the great maneuvers. It is on too large a scale to be taken for an ordinary diplomatic call, especially if, as is rumored, the Australian fleet is expected to join in the subsequent maneuvers. The distance between Hawaii and New Zealand or the eastern shore of Australia is about the same as that between Hawaii and Tokyo Bay, or four thousand sea miles, and the voyage will prove the practicability of the voyage of a similar armada from Hawaii to Japan. So the voyage of the American fleet to Australia may, in a sense, be looked upon as a rehearsal of aggressive operations against Japan. . . . .

The relations between America and Japan, which were relieved by the Washington Agreements and improved by the great sympathy shown this nation by America on the occasion of the earthquake, have suddenly taken a turn for the worse in consequence of the anti-Japanese legislation in the spring of last year. As a result, the prevailing sentiment in Japan toward America is very dangerous. It is reported that many officers are inculcating extreme anti-American sentiments into their soldiers. Several books have been published urging the nation to deal with America as an enemy, to chastise America, and the like. This has been magnified by anti-Japanese agitators in America until Americans who do not know the real strength of Japan are clamoring for war, while those who know better have thought it politic to get up huge maneuvers in order to intimidate Japan by a superior show of force.

But while many Japanese thoughtlessly and irresponsibly talk of war with America, there is hardly any person with any knowledge of the conditions in Japan and America who seriously entertains the idea of hostilities between the two nations. War should be started, if at all, only when there is a firm belief in victory. Nothing is more dangerous and pernicious than to fan warlike sentiments without an invincible resolution to fight to a bitter and victorious end. From a military point of view we have nothing to fear from the American maneuvers, because it is our firm belief that so long as the Japanese navy maintains its present strength and does not venture on reckless tactics the American Navy will be unable to do anything against Japan except make aerial attacks. What is to be feared is that our militarists and morbid chauvinists may incite the docile and credulous nation to an unnecessary extension of armaments and an unprofitable war with America.

But while the thoughtful section of this nation never contemplates war with America, it is not without reason that the foreign nations suspect Japan of militaristic and aggressive views and stand on their guard. To begin with, as a result of many years' isolation, our nation is devoid of diplomatic training and has the fault of expressing its feelings to foreign nations bluntly and coarsely. In common with the other Orientals, Japanese are apt to attach importance to the surface rather than to substance, to appearances rather than to contents. The anti-Japanese immigration law, for instance, is really a trivial matter when it is calmly scrutinized, and yet there are people who talk as if we must fight to vindicate the honor of the country. America deserves sympathetic consideration for disliking Japanese immigrants, even as we object to the immigration of Chinese laborers. Japan would be in the wrong if she regarded America as a legitimate outlet for her superfluous population or a preserve for her unemployed.

Furthermore, as not many years have elapsed since the overthrow of the feudal system under which the bushi were all-powerful, the military spirit is still deeply implanted in the soul of our nation, and many leaders in all lines of activity—political, economic, and otherwise—are people who have received the baptism of *bushi*. Besides, our great victories in the wars with China and Russia, which are believed to have brought about the present

progress of the country, naturally strengthened the influence of military men and gradually led to the formation of a military clique of great political weight. The governmental institutions of Japan, moreover, are modeled on the German system. Their military spirit is pronounced, for example, in the regulations concerning the appointment of the ministers for the army and navy, and the power of certain military and naval magnates to approach the Emperor personally with their views. Since the military spirit is strong in our nation, the military clique is powerful in politics, and our institutions are decidedly militaristic, Japan must inevitably move along militaristic lines.

It is a mistake, however, to imagine that the Japanese are a bloodthirsty and belligerent nation. In fact, they do not know what a serious foreign war is like. Their success against China and Russia has given them false faith in themselves. They are disposed to welcome a war in the belief that they are sure to be victorious and to win new territories. Knowing only the advantages of war and not its evils, the nation has been taught to talk thoughtlessly of it. If the present generation is warlike, therefore, it is not because of its inborn national character, but a result of its exaggerated faith in *Yamatodamashii* and an overhigh opinion of its military genius.

Of late we hear brave cries of "Asia for the Asiatics," or "The Great League of Asia." So far as justice and humanity go, we entirely endorse the idea. As a matter of fact, however, the greater part of Asia is not peopled by Asiatics. In order to bring about "Asia for the Asiatics," we shall have to expel the whites from Asia and recover the independence and freedom of Asiatic nations. It is hardly necessary to point out that nothing is more likely to be resented than such a movement by the white nations, to whom "Asia for the Asiatics" is an open challenge. So if Japan assumes leadership of an Asiatic League, it is obvious that the attacks of the white nations will be concentrated on Japan.

Furthermore, the principle of Asia for the Asiatics logically means Japan for the Japanese, Korea for the Koreans, and so on. It is thus inconsistent for Japan to preach this ideal while she herself holds Korea under her domination. The colored races are the proletariat of the world, so to speak, and Asia for the Asiatics means the emancipation of the racial proletariat from white oppression. This being so, is it fitting for Japan, herself an imperialistic power though on a small scale, to presume to lead the proletarian nations to their emancipation? Human nature is indeed a complex and curious thing: Japanese Conservatives, who are most zealous in defending capitalism and most strongly opposed to the emancipation of the proletariat, are the very ones who are most annoyed by the American naval maneuvers and who have war between Japan and American constantly in their mouths.

America is a new country. It has no old traditions and conventions. It is not trammeled by time-honored usages. Its people are creative and progressive, fresh in spirit, free in ideas, bold, willful and changeable in temper, like the sons of a rich man who have had no experience in life's trials. Should the Japanese, sentimental and stubborn, fly in the face of a nation so impulsive and excitable as the Americans are, a collision will be inevitable. In dealing with the Americans, therefore, Japan would do better to follow the example of the cool and deliberate British.

No other two neighboring nations contrast with each other in so many respects as America and Japan. America is an extensive country sparsely peopled and so an importer of immigrants, while Japan is a small country densely crowded and an exporter of emigrants. In the United States equality rules in society and liberalism and progressivism in politics,

whereas in Japan society is cut up into classes and politics is dominated by militarism and conservatism. The Americans are outspoken and frank, while we are silent and gloomy. They are apt to laugh and play pranks; we are disposed to take offense and get angry. They attach greater importance to substance than to form, while the reverse is the case with us. The only points of resemblance are, perhaps, that neither country has had any experience with real international difficulties and that both are willful and self-conceited. But these differences are no reason why the two nations should disagree and quarrel. There is really no cause for them to go to war with each other.

Korea was the object of the Sino-Japanese War, and Manchuria was the cause of the Russo-Japanese War. In like manner, Cuba was the reason for the war between the United States and Spain. But there is no such motive for war between Japan and America. As for China, she is not a problem between Japan and America alone, but a problem for the whole world. If collision ever occurs between America and Japan, therefore, it must be either a conflict of feelings or a conflict of misunderstandings or a conflict of honor.

There is one serious question which Japan must settle in order to adjust her relations with Ameria—nay, with the entire outer world. That is the question of population. What is to be done to accommodate our ever-increasing numbers of our scanty resources? This is Japan's greatest problem, and is troubling the whole world. This is one reason why America regards Japan with doubt and suspicion. It is entirely on account of this that Australia is afraid of Japan, and Holland is so alarmed for her South Sea islands, France for Annam, and Britain for India. The objection of Westerners that it is irrational for Japan to procreate beyond her means of subsistence and then insist on shipping some of her children to foreign countries, callous though it seems, is reasonable. So long as Japan does not settle this problem independently of external assistance, the other nations will not cease to be on their guard against her. What is the proprietor of a confectionary to think when a man of suspicious appearance stands about his shop with an army of greedy urchins?

GERMANY

HINDENBURG ELECTED PRESIDENT.—In the final presidential election held in Germany on April 26, Field Marshal von Hindenburg was elected president. The vote was as follows:

Hindenburg (Coalition of Parties of the Right)	14,648,775
Marx (Socialist-Center-Democratic Coalition)	13,760,089
Thaelmann (Communist)	1,931,635

In the preliminary election held on March 29, no candidate received more than half of the total vote. Jarres, representing the Right Bloc, received about 10,000,000, and about 13,000,000 went to candidates of the Socialists, Center, and Democratic parties. Hence it was anticipated that in the second election which was necessary the candidate of the latter parties would be elected. By persuading Jarres to withdraw and Hindenburg to take his place, however, the Right parties overcame the lead. About 3,500,000 more votes were cast in the second election, and of these it was calculated that five out of six went to Hindenburg. The inauguration was set for May 12, in spite of Socialist complaints of election irregularities.

FRANCE

CABINET UPHEAVAL.—On April 10, the Herriot Ministry in France resigned after an adverse vote in the Senate. The Government fell as a result of financial difficulties, which reached a climax when it was revealed that the Bank of France had been allowed to issue notes in excess of the legal limit by more than two billion francs. Premier Herriot attributed his troubles to disguised inflation and weak financial measures on the part of his predecessors, to remedy which he proposed a "voluntary" loan from French private capital. By preventing depreciation of the franc, he argued, this would actually strengthen the position of capital.

Following unsuccessful efforts by M. Briand, a new Cabinet was organized on April 10 headed by Paul Painlevé, with M. Briand as Minister of Foreign Affairs. Former Premier Joseph Caillaux, imprisoned during the war for treason and only recently restored to the privileges of a citizen, became Minister of Finance. In spite of bitter attacks on Caillaux, the new cabinet was given a vote of confidence in the Chamber on April 21. Its composition still represents a coalition of the Left, though more moderate than that of Herriot. Municipal elections in France following the cabinet change and the presidential elections in Germany, indicated, contrary to expectation, a slight strengthening of the Left parties.

UPRISING IN MOROCCO.—Hostile operations against the French in the part of the Riff tribes in Morocco, led by Abd-el-Krim, were actively begun early in May. These had been anticipated ever since the Spanish withdrawal to the coast, which left the Riffs free to undertake hostilities against the French to the southward. The conflict was looked upon as struggle for prestige between Adb-el-Krim and Marshal Lyantry, whose pacification of French Morocco and administration without force has aroused admiration even outside of France. It was believed that the Riff leader's plans called for agitation among tribes within the French zone and an advance on Fez, some sixty miles to the south, but that the French troops would have little difficulty in defense. Serious casualties were reported in early engagements.

NEAR EAST

COMMUNIST OUTRAGES IN BULGARIA.—On April 14 King Boris of Bulgaria narrowly escaped assassination when his automobile was attacked by an armed band near Sofia. Two of his attendants were killed. On the same date, General Gheorghieff, prominent in the overthrow of the Stambulisky Peasant Government in 1923, was murdered in the capitol. At his funeral, when the Sofia cathedral was filled with political dignitaries, a bomb was exploded killing 160 and wounding over 300. It was believed that all of these outrages were a result of bitter party feuds in Bulgaria, and that the more radical Agrarian leaders were supported by communist agitators from Russia. The government was largely taken over by the

military authorities, wholesale arrests were made and many were executed, as measures of severe repression.

NEGOTIATIONS FOR SECURITY PACT

GERMAN OFFERS.—In a statement to the House of Commons on March 24, Mr. Austen Chamberlain, British Foreign Secretary, made public the proposals of Germany as to the terms upon which she would enter with a security pact with both France and England. In his speech Mr. Chamberlain outlined the German offers as follows:

"The German proposals were very properly put in somewhat liquid shape. They have not been the subject of any precise or rigid definition. They are put forward as a possible basis for discussion, not as a thing to be taken or left or an agreement already put into a form in which it might be signed. They did not come to me fully in the first instance. They came to me in circumstances of attempted secrecy which, as I have already admitted, caused me to feel some suspicion about them.

"But I am convinced from what has passed since, that the German Government is making a sincere and honest attempt to lead to a better state of things, and it is in the hope that we may assist to carry that effort to a fruitful conclusion that we have engaged in our serious discussion of their proposals.

"I would outline the German suggestion as follows: Germany's interest is in the establishment of a special treaty foundation for a peaceful understanding with France. Germany is prepared to consider a comprehensive arbitration treaty and to enter into a mutual pact with the powers interested in the Rhine. Similar arbitration treaties may be concluded with other states which have common boundaries with Germany. If those states desire, a further pact universally guaranteeing the present territorial status on the Rhine would be acceptable to Germany and the pact may further guarantee fulfilment of Articles 42 and 43 of the Treaty of Versailles.

"I think the House will agree with His Majesty's Government that it is a signal advance that such proposals should have reached us even in vague form and on her own motion from Germany. They amount, if I understand it rightly, to this: That Germany is prepared to guarantee voluntarily what hitherto she has accepted only under compulsion of the treaty, the *status quo* in the West, and that she is prepared to eliminate war, not merely from the West but from the East, as an engine by which any alteration in that treaty position is to be obtained.

"She is prepared to disavow and abandon any idea of recourse to war for the purpose of changing the treaty boundaries of Europe. She may be unwilling, she may be unable, to make the same renunciation of all hopes and aspirations that some day, by friendly arrangement and mutual agreement, modification may be introduced in the East which she is prepared to make in regard to any modifications in the West."

FRENCH VIEW OF GERMAN PROPOSALS.—The terms upon which the French Government would consider negotiations for a security agreement to include Germany were outlined to the British Government at the close of March as follows: (1) Germany must first make a satisfactory settlement of all defaults on the military clauses of the Versailles Treaty; (2) there must be no implication of any plan to revise any part of the Ver-

sailles Treaty; (3) Germany must join the League of Nations, accepting the common obligations of the covenant. In his note to Germany, it was reported that M. Briand, the new French Foreign Minister, would raise qualified objections to any arbitration or rectification of Germany's eastern frontier.

Paris, March 24.—Austen Chamberlain's measured exposé of the whole security and peace situation has tonight made a remarkably good impression in Paris.

His presentation of the German case and his estimate of its value will undoubtedly be combated by those who regard the German word as not only broken in 1914 but broken forever; but in the country as a whole, ready as it is to welcome almost any suggestion which will give security with honor, there is growing up the idea that the only real security for France lies in friendship with both her big neighbors and not in combinations of one group against the other.

To French acceptance of the German proposals two of the main objections have already been distrust of any German promise and the idea that acceptance of a compact on the western frontier would necessitate sacrificing France's ally, Poland. Put before the country as Mr. Chamberlain has put it, the proposals are largely stripped of these fears. The fact that England is willing to underwrite a German compact on the west is an argument in its favor which makes it almost impossible for any Frenchman to refuse on the sole ground of distrust.

As for the Polish question, Premier Herriot himself has said that, while France will never fail her ally, it is for Poland herself to decide how she will act with regard to alteration of her frontier.—New York *Times*.

VIEWS OF A SECOND NAVAL CONFERENCE

Senator Borah's Objections.—It was announced on March 24 that President Coolidge had turned over to Secretary of State Kellogg for careful study the question of the feasibility of a new naval limitation conference, and that no further steps would be taken in the immediate future. After an interview with the President, Senator Borah, chairman of the Senate Foreign Affairs Committee, expressed conditional approval of the efforts for another conference, but pointed out the following indications of its futility: (1) French refusal to consider limitation of land armament or aircraft; (2) British refusal to stop submarine construction so long as the French Army remains large; (3) British construction of the Singapore base; (4) poison gas a part of French system of defense; (5) capital ships already limited and nothing left to consider except auxiliary vessels; (6) the United States without great naval strength to "swap" or scrap.

French View of Conference.—The French instructions regarding a naval conference given to the French ambassador, M. Daeschner, on his departure for Washington, were reported in a Paris despatch to the Manchester *Guardian* as follows:

"France frankly declares that a conference at Washington at this juncture does not appeal to her and that her attention at present is directed toward more pressing and vital matters. Regarding land armaments it is

emphatically declared that France cannot discuss disarmament until she receives security.

"Aerial armaments, in the French view, are under the same category. France will not discuss reduction of her air fleets until she has received satisfaction of her claim for security.

"Regarding limitations of submarine and light cruisers, French hostility, for diplomatic reasons, cannot be made so clear, nevertheless that hostility is very firm. French opinion never has accepted the relegation of France to the position of a third-rate naval power. She intends when the treaty period expires to insist on a revision, even on big ship units.

"The Root resolution adopted at Washington, forbidding the use of submarines against commerce, never was accepted by the French Government and has not been ratified by the French Parliament. The French attitude toward submarine warfare, which caused such a revulsion of opinion against France during the Washington Conference, remains unshakable.

"This, however, is conceivable—that under pressure the French Admiralty might agree to forego the use of her submarine fleet against merchant ships if the prohibition was accompanied by such a definition that a ship mounted with a gun or even with a gun mounting, or a ship carrying munitions would cease to be a merchant ship.

"Moreover, France, as at Washington, means to insist that, pending a revision of the Washington Agreement, she remains, at least in submarines and light cruisers, a first-rate naval power.

"It is hardly necessary to insist on the further objection that the atmosphere at Washington makes that capital undesirable, from the French standpoint, as a place for the conference, or on the argument that there is only one path to disarmament—through Geneva."

JAPANESE PRESS CONDEMNS PROJECT.—(Hector C. Bywater in Baltimore *Sun* of 4 April.)—America's suggestion for a new arms conference is meeting with no very cordial response in Japan. Seldom has the press of that country shown itself so unanimous on a question of foreign politics. Journals which ordinarily profess liberal doctrines are on this occasion lining up with extremist national organs in condemning the Washington proposal.

And if the Tokia *Asahi* is well informed, the attitude of the press reflects that of the authorities, who see no point in summoning a fresh conference at the present juncture. Says this newpsaper: "Not only are the Japanese people indifferent to the idea, but both Britain and America have given Japan cause to suspect their sincerity in regard to peace in the Pacific."

The Osaka *Asahi* goes even further than its Tokio namesake in pouring scorn on the idea of a new conference. It is absurd of America, this paper thinks, to organize such a gathering without first making earnest efforts to remove "a serious cause of war"—namely, the anti-Japanese immigration law.

The *Yorodzu* is amazed at the inconsistency which America shows in advocating disarmament at a time when it is doing everything possible to foster militarism among its own people.

"If American compels other powers to reduce their armaments more drastically than she reduces hers, her predominance will remain unimpaired," we are told. "The first Washington Conference made America virtually the premier naval power of the world.

"Among other indications of the daily growth of militarism in the United States may be mentioned gigantic coast defenses, the gun-elevation problem, the expansion of air forces and the dissemination of military education. Mobilization Day and the coming grand naval maneuvers in the Pacific are no less indicative of her militarist tendencies. If the Japanese

Government, with its eyes fully open to these facts, consents to a second disarmament conference at Washington, its action must be emphatically condemned."

The *Yamato, Yomiuri, Miyako* and other organs write in much stronger terms of the perfidious motives which underlie America's desire to bring about a further reduction in Japanese armaments. Official circles preserve a discreet silence, though the newspapers which most frequently ventilate government views are entirely hostile to the idea of a new conference.

This is the more surprising in view of the recent demands of the press for a drastic reduction in current expenditures on armaments. Two months ago the *Jiji* was deploring that over thirty per cent of extraordinary appropriations in the new budget were made in behalf of the fighting services. In the present year national defense accounts for thirty-five per cent of the entire government outlay. As a result of this policy, the cultural and productive services are being starved, and until quite lately the liberal elements were protesting against such extravagant expenditures on defenses which, as they maintained, were already more than adequate.

It, therefore, looks as if the opposition to a second conference on armaments were due, not to any inherent dislike for the principle itself, but simply to the fact that America is the prime mover in the scheme. Japan was perfectly willing to attend the League of Nations gathering, and there is no reason to question her readiness to concur in any rational project of armament limitation which that assembly might have evolved. But America she regards as a potential enemy, whose motives in seeking to effect a further reduction in Japanese armaments are far from disinterested.

First Conference Treaties Still Unratified.—In a letter to the New York *Times* of April 4 Mr. William Howard Gardiner, vice president of the Navy League, pointed out that although the "Four-Power Treaty" regarding Pacific insular possessions, and the "Five-Power Treaty" limiting naval armaments had both been ratified, the "Nine-Power Treaty" setting forth the more important understandings on principles and policies in the Far East has not yet been ratified by France. Nor has the treaty prohibiting gas warfare or limiting submarine warfare. The letter, quoting a statement of John W. Davis last autumn, continued as follows:

Consequently, as Mr. Davis said in his above-quoted statement, "Failure of France to ratify makes these two important treaties ineffective and valueless, and instead of having solved the Chinese question and established the open door by a nine-power agreement, we have done nothing of the sort, and have no treaty support of our long-time policy in China, although we made real surrenders of our own and of Chinese interests in the Four-Power Treaty. That this was regarded as one of the most important objects to be attained by the Washington Conference is attested by every official paper preliminary to the conference." Mr. Davis might well have added that the Naval Treaty virtually deprived us of the ability to protect our dependents, to safeguard our trade and other interests, and to maintain an equitable peace in the Far East unless we maintain our navy at least up to the 5-5-3 ratio in every essential respect, a thing that the present Administration has shown no intention of doing.

In short, we have not attained the most important agreement as to policy that would have warranted naval limitation; and yet by having the Naval Treaty put in effect separately our armament has been limited below any point warranted in the absence of such agreement as to policy. . . . .

The present trend of affairs in China makes it patent that the Nine-Power Treaty is exceedingly important to China; for it not only assures equality of economic opportunity to the subscribing powers in China, but also assures her integrity and autonomy. In view of the constancy of human nature, there is, therefore, nothing surprising in the fact that France is withholding her ratification of the Nine-Power Treaty in an effort to obtain from China especially preferential treatment in another matter in no way related to the conference. But the further fact that these would-be exactions of France from China are entirely beyond the latter's capacity adds especial interest to the growing Franco-Japanese entente. For while the Japanese Empire is on record as having promptly ratified the Nine-Power Treaty, the trend of events in China would make it equally patent that the Japanese may find it very convenient to point to the fact that, in spite of their having ratified it, nevertheless the Nine-Power Treaty is as invalid as a check that lacks one signature of several required. . . . .

But, in suggesting that the settlement of major matters of international policy should precede the reduction of armaments, as the latter might follow automatically, your remarkable editorial went to the root of the whole question. Applying this to the present situation, should we not concentrate every effort on securing from France the final ratification of the Nine-Power Treaty before entering upon what experience has shown is likely to be the very hazardous undertaking of another arms conference—at least until we can talk on terms of equality?

There is, however, a very much broader point of view from which this whole question should be explored with an open mind directed to ultimate ends—if our Ship of State is really to be navigated by bearings from President Coolidge's two fixed stars, the record of the past and the constancy of human nature. Then what present answer would we make to the record in Asia, in Africa and in Europe, that nation after nation and civilization after civilization has been overrun and has gone down before more virile people after its affluence had led to such peace-loving effeteness that it would not maintain its arms to defend its dependents?

MEETING OF ARMS SALE CONFERENCE.—An International Conference for the Control of Traffic in Arms, under the auspices of the League of Nations, met at Geneva on May 3. The business of the conference will be to consider a draft convention for the control of such traffic prepared by a committee of experts. This draft includes almost all of Africa as well as parts of Asia, in territory where arms traffic is restricted. Forty-three nations were represented, including four non-league states. The United States delegation was headed by Theodore E. Burton.

UNITED STATES AND LATIN AMERICA

TACNA-ARICA AWARD FINAL.—On April 9 Secretary Kellogg transmitted President Coolidge's reply to the objections raised by Peru over the award made in the Tacna-Arica dispute between Peru and Chili. The reply called attention to the fact that in submitting the question to arbitration both parties had agreed to accept the award as final. It was further pointed out that Peru's complaints regarding occupation of the plebiscite territory by Chilean troops, and other matters in dispute, should properly be presented to the plebiscite commission, of which General Pershing is the United States member and chairman.

U. S. Naval Forces Landed in Honduras.—Washington, April 20.—One hundred fifty-five officers and men from the cruiser *Denver* of the special service squadron landed today at Ceiba, Honduras.

They are under orders to protect American lives and property that may be endangered as a result of a revolutionary outbreak there.

The *Denver* is commanded by Captain W. N. Jeffers, who advised the Navy Department by radio dispatches that the landing had been effected.

Details of his report on the situation were not revealed, but other advices to the Washington Government from Honduran sources tend to indicate that the revolutionary movement had assumed widespread proportions.

Captain Jeffers acted at the request of the American Consul at Ceiba, supported by the authorities of the port.

Disorders of limited scope were said to have occurred at Ceiba and aroused the authorities to take precautionary steps for the protection of foreign lives and property.

Two days later, on the arrival of government troops at Ceiba, the American force was withdrawn.

FAR EAST

Reform of Japanese Upper House.—The Japanese Privy Council has under consideration a reorganization of the Japanese House of Lords designed to reduce the power of the peers and make the body more directly representative of national sentiment. The proposed reforms would reduce the number of peers in the chamber from about one half to one third of the total, and these would be elected by the peers from their own number for terms of seven years; another third of the members would be appointed by the Crown, and the remainder would be elected by the lower house. The total number of the House of Lords is now 403. The lower house has about sixty more members, of which the party now dominated by the nobles (Keusei kai) has 159 votes.

Russo-Japanese Treaty No Violation of Washington Pact.—(From New York *Times*, 11 April.)—Washington, April 10.—According to a White House spokesman today, "certain interests" which are not pleased with the terms of the recent agreement between the governments of Japan and Soviet Russia giving concessions for exploiting oil and minerals in the Russian portion of Sakhalin Island were putting an interpretation on that agreement that was not warranted. This interpretation is that the concessions obtained by Japan violate the pledge signed at the Washington Conference on limitation of armament and Far Eastern affairs by the participating nations, Japan among them, to observe the open-door principle in concessionary privileges in Russian territory.

It was made known that President Coolidge and Secretary Kellogg, after an examination and study of the agreement, have reached the conclusion that there is no violation of the open-door principle on Japan's part. The text of the agreement, it was said, would remove any doubt on the subject.

Sees Danger in Pacific.—(From New York *Times*, 2 April.)—Paris, April 1.—"If war ever breaks out in the Pacific, the victims will be counted by tens of millions. The last war was called the World War, but this really will be the world war with everyone in it."

This statement as made by Senator de Monzie, who arranged for the recognition of Soviet Russia and who is now engaged in preparing a report on French colonies for the Senate.

"Neither America nor Japan," he said, "seems to realize what they are headed toward, but we, with our Indo-China and Pacific islands, can see the danger as it exists. Who is going to control the Pacific—the United States or Japan? Class their interests as the most important international fact with the possible exception of the Soviet colonial plans.

"Moscow is building a new type of empire. Stirring national and race feeling, Moscow is working to break down all existent colonial systems, turning each colony into a Soviet state dependent upon Moscow. My reports show the intensity of the Soviet propaganda in French colonies.

"They are working to affiliate to Moscow by revolution all the British, French and other colonies, but the system of power they foresee is even bigger, as they are working for Soviet states in China, India, Turkey, Arabia, Egypt and the Balkans, all affiliated with Moscow.

"The struggles for the control of the Pacific and the formation of an Asiatic Soviet empire are coming simultaneously. Unless we succeed in stopping Soviet propaganda as well as arranging a reasonable settlement of the Pacific problem we risk seeing the world turned into a battlefield on five continents and the seven seas.

"The Washington Conference limited armaments. The next disarmament conference must study the causes of the conflict in the Pacific, a problem in which America is most interested."

REVIEW OF BOOKS

THE GERMAN SECRET SERVICE—By Colonel W. Nicolai, Chief of the German Intelligence Service during the War.* Published by Stanley Paul & Co. Ltd., 8, Endsleigh Gardens, Upper Woburn Place, London, W. C. 1. German edition 1924. English edition 1925. Translated by George Renwick, (the *Daily Chronicle* Special Correspondent). Price in London 10/6 net.

By Rear Admiral A. P. Niblack, U. S. Navy (Ret.)

We have had two very interesting books, from the English standpoint, of British Secret Service work during the World War; the first, called the *Mysteries of Crew House,* gave the particulars of Lord Northcliffe's most valuable and important propaganda work toward the close of the war; and, the second, *The Triumph of Unarmed Forces,* by Rear Admiral Consett, R. N., who was British Naval Attaché in Norway, Sweden and Denmark throughout the World War, which book gave us the particulars of the blockade of Germany from 1914-18. The German book, however, goes to the root of the whole matter of espionage, before, during, and after the war, and shows the change which took place from purely military espionage into economic and political espionage. It is such an amazing revelation that one at first regards it as propaganda, which it is, but the motive is frankly to warn the German people of the danger which has arisen since the Republic came in. It is the only book in existence that tells the unvarnished truth about secret service work, for he makes it quite obvious that he is telling the truth in order to enforce his warning both of the importance and of the deficiencies of the German intelligence service. The book is dedicated to "My country as a warning and as a lesson to all who would help her win back her freedom and who are, for that reason, threatened by her foes," and in the preface he adds, ". . . . This matter is also of interest to those states which, because they have no I. S. [Intelligence Service] have no real notion of its importance and therefore do not suspect that their political freedom and their nationality are threatened by those powerful states which have come out of the war as masters of secret service, and of that political propaganda which is born of espionage." "But England, and more especially America, should be on their guard against the French Secret Service which they are promoting as they have promoted also France's military predominance."

*It is said that the author was "blackballed" in the Military Club in Berlin on account of publishing this book.

In his description of pre-war espionage, Colonel Nicolai tells us that the Imperial German General Staff had a fairly large and efficient service in both France and Russia, but no service worth mentioning in England and none at all in America. The espionage in France was possible before the war because the population contains a large "international" element, and was possible in Russia because Russians of all classes were venal, but under the stress of war, when it broke out, the services in both countries broke down, "to the honor of the French and Russian people." When war came on, the Intelligence Service had to be completely reconstructed. Colonel Nicolai was appointed the chief of the German Military Intelligence Service early in 1913, and he claims that the fact that so young an officer of only the rank of colonel was given such an important position indicated that the service was not a very extensive one. He says that the appointment was due to the fact that General Ludendorff had become head of the Operations Section and was pressing for a better organization. He describes how their military espionages in France and Russia were developed after the outbreak of war and says that they had very little success in England on account of the sea barrier, and, as for America, Berlin knew much less than Washington did, where a group of German-Americans, by sporadic acts of sabotage and with no systematic plan, did far more harm than good to the German cause. His analyses of the French and British espionage and counter-espionage systems both before and during the war are only equaled in their interest by his description of their systems since the war, in which he gives in all cases names, places and dates. The espionage work of the Allies, he says, was divided as follows:

> To Russia fell almost exclusively the task of military investigation in Germany, Austria-Hungary and the Balkans; France devoted her attentions to military and political Intelligence Service in Germany and Italy; England, released from military anxieties, restricted her activities to gathering information with regard to naval warfare; she looked also after political-economic matters and prepared the political propaganda against Germany. . . . The United States left military espionage in the northern countries to the English and French Services. They themselves were concerned here almost exclusively with the state of the German mercantile marine, the economic condition, the food situation in Germany and the temper of the German people. On this account systematic service was set up under the control of the Naval and Commercial Attachés and the Consulates-General in Copenhagen, Kristiania and Stockholm. . . . . But with her (America's) entry into the war, political espionage and propaganda received a fresh impetus. The center of political espionage was subsequently with the Americans, for the military with the French, after the establishment of the unity of command, for the economic with the English, who set up an Intelligence center at Folkestone.

This is interesting because it corresponds exactly with what Rear Admiral Consett says in the *Triumph of Unarmed Forces*, that the prolongation of the war from the six months or year for which Germany had calculated her reserves to four and one-half years was mainly due to her supplies by British traders of food stuffs and materials for munitions. "The enemy was thus continuously supplied until 1917, when, with the entrance of the United States into the war, the blockade was for the first time enforced."

The explanation of this is that, up to the entry of the United States into the war in April, 1917, the U. S. Diplomatic Corps, Consular Service and American residents in Germany, were able to observe conditions which enabled them to put their finger on all the weak spots in the German machine and to correct many faults which the Allies themselves had been committing. The author shows that the French method was espionage en masse: viz., a great number of agents who "produced great quantities of news, the worth of which was difficult to estimate and in the volume of which the little that was important and accurate was lost." Colonel Nicolai's belief on the other hand was that quality was more important than quantity—"it is one of the peculiarities of intelligence work that bad agents send in a great deal of news and good ones very little. . . . . The French Intelligence Service is not so much concerned with ascertaining facts as with obtaining reports which assist in the realization of French political aims." The author maintains that, although it failed on its political side in the matter of propaganda, the German Intelligence Service was extremely efficient for purely military purposes, far better than any of the Entente Powers. "It is a fact that the German supreme command was not surprised by the events in any case of importance, and it was not until July, 1918, that a German attack met for the first time a completely informed enemy, with fatal consequences; it seems that the enemy owed his knowledge not to his espionage, but to the statements of German prisoners." He claims that the German military collapse was brought about by revolution in the rear of the army and not by military defeat.

In connection with the supposed surprise of the Germans by the enormous American reinforcements sent over, he gives full particulars of what their information really was, and shows that they over-estimated rather than under-estimated the number of troops which came over. Speaking of prisoners of war he says:

When America declared war against Germany the prisoners' confidence in victory rose considerably. The arrival of the American troops was looked forward to with enthusiasm. But a change soon took place among the English and French prisoners. It offended their pride that they should have to admit that the Americans were their saviors in the hour of need. The understandable small achievements of the newly-formed American divisions and their initial helplessness in nearly all military matters led to the American troops being despised to some extent by the war-hardened English and French. But when the Americans quickly and successfully got through their apprenticeship they won recognition from the Allies by their excellent conduct, but the circumstance that they were there as rescuers, and the conceit which the Americans showed preserved them the estrangement which had always existed between the American and the other prisoners. As for the attitude of the Americans toward the French population, it transpired that they aimed at a correct forbearing attitude and showed natural and spontaneous discipline. As their pay was high and as they spent money very freely, they appeared to a suffering population as profitable guests and more welcome ones than the English and even the native French troops.

The book is an admirable treatise on the Intelligence Service and outlines the French system before, during and since the war. He says in this connection that the present French Intelligence Service is in the French

Foreign Office, and is divided into six departments—"diplomatic, home political, the military, the technical industrial, economic investigation and propaganda, and the safeguarding of France from foreign Intelligence Service in each of these spheres (counter espionage).

The book is a masterly analysis of espionage both in time of peace and in war. He shows that originally espionage was entirely military, but as the war progressed and since the war, it has been largely political and economic accompanied by propaganda as a by-product.

The writer traces the development of the French espionage and counter-espionage services and shows how, as the war went on, the French changed their methods of getting spies in behind the German lines with carrier pigeons to work their way to the front and get information. Knowing that the population behind the German lines was French and friendly, they landed their spies in civilian clothes first from airplanes in regions well behind the lines; this method proving ineffective and noisy, they substituted balloons and landed the men from them. In 1917 they devised a third system whereby the spies were dropped by parachutes from airplanes. In all these cases carrier pigeons were landed with them. Later, a fourth system was tried by which pigeons in couples in small baskets were dropped by little silken parachutes. In the baskets were food for the pigeons, instructions how to handle them, documents to be filled in, samples of reports, French money and propaganda. In December, 1917, the Germans discovered sixty-three of these baskets that had failed in their purpose; in January, 1918, forty-one, and at the end of May, 1918, forty-five, behind one army alone. These, of course, represent but a small fraction of the numbers of pigeons that were dropped. The French also used tissue paper balloons filled from an ordinary gas jet, which, with a favorable wind, were blown over the lines and ultimately descended. These carried several packages consisting of folded tissue paper balloons and complete instructions how to use them. Often chemicals were included in the packages so that the finder could make gas on the spot with which to fill the balloons. They had the disadvantage, as compared with pigeons, that they could only be used when the wind was favorable. Small wireless sets were also dropped with instructions in mounting, using and ciphering. Toward the end of the war, the French used large tissue paper balloons to distribute hundreds of pamphlets which were dropped automatically in small bundles as a slow fuse burned away the retaining cord. The propaganda contained appeals to desertion, to strike and to revolution. In January, 1918, in the area of one German army alone, no fewer than 300,000 enemy pamphlets were handed over to the military authorities as having failed in their purpose.

He winds up the book with the following paragraph:

Into a dark future and ahead of developments the Intelligence Service goes to investigate and to influence. Never before was the time more favorable for its work. This particularly concerns England and the United States. The structure of the British Empire, and the immigration and race problems in North America call for the use [by Germany?] of the arts of the Intelligence Service.

It is difficult to decide whether or not he means that Germany should intrigue through an Intelligence Service in stirring up strife in the British Empire and in the U. S. A. because on page 138 he says, speaking of the Austria-Hungarian Empire composed of eleven different nationalities:

No army can exist when the people are split up into parties and races. The dissolution of the Austria-Hungarian union was the aim of powerful forces before the war and, in order rightly to estimate the effects of that on the army it is necessary to know how matters developed over a considerable period of time. After 1908 this destructive program set in with renewed force. . . . . In 1910, nineteen Russian spies were brought to trial; in 1913 thirty-four and in 1914, up to the war, thirty-six. . . . . In all large towns Russian agents sat, and during a whole generation nearly every Russian Military Attaché in Vienna had to leave his post because he had been caught spying. . . . . Italy, in spite of her being a member of the Triple Alliance, carried on a widespread espionage service against Austria-Hungary. . . . . The seed planted by years of work before the war sprang up during the struggle. Austria-Hungary, just like Bulgaria, is a warning example of the effect of a systematic preparation for war by means of a splitting of the unity of a people.

It is difficult to overestimate the importance of this book to Americans, who are fed on propaganda by the daily press through those who control the news through ownership or for party politics. The author shows the importance, the dignity and patriotism of espionage, which is merely information necessary to conduct operations intelligently. No great business firm can operate without information, nor can any military body or any government. The data which the author gives as to espionage now going on in Europe, with places, dates and names, ought to be of sufficient importance to arouse more than passing notice.

REVIEW OF WESTINGHOUSE CATALOGUE OF MARINE EQUIPMENT, 1925-26. Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania.

This book is not a catalogue in the usually accepted term, but is an excellent text and handbook. While intended mainly for ship operators, naval architects and purchasing agents, it is of wide and varied interest to all of the sea-going tribe.

The work goes thoroughly into the following items:

General electrical data of a useful nature.

Concise explanation of marine apparatus giving uses, care and management.

Practical tables and formulæ for proper estimation of sizes of apparatus.

Useful notes on Navigation, Seamanship and Engineering.

Trade Information.

Tables of Weights and Measures.

Under the head of Trade Information every naval officer will be interested in the Shipping Notes which include nine quotations relative to F.O.B., F.A.S. and C.I.F.

Most of us are a little vague as to the obligations of the buyer, seller and carrier in the merchant service, and a little better knowledge would possibly save us a lot of regret after a visit of search in time of war. The Marine Insurance notes, the list of and description of shipping papers such as shipping permit, bills of lading, "documentary bills," charter parties, manifests, etc., are interesting.

The chapter on fuel and lubrication is short clear and instructive.

The treatment of A.C. and D.C. electricity is clear and concise. Necessary definitions are given and explained. It is noted that the author deals with motors first and then with generators. The reason is not quite clear.

The care, management and operation of motors and generators are gone into in some detail.

The most interesting section of the whole book is the one which deals with "Propulsion Equipment." Here in the historical preface it is rather startling to be reminded that the first steam turbine in practical form was introduced into this country in 1896, and that the first commercial turbine generator was installed in 1899.

Turbine Electric Propulsion is given only about six pages but these pages are full of meat. A brief description of the *Tennessee's* plant is given.

Considerable space is given to the Diesel Electric Drive. This type of propulsion apparently ranks high with Westinghouse and their arguments in its favor are most convincing. The advantages of D.C. over A.C. for use with the Diesel are clearly shown.

The author gives the advantages of the Diesel Electric Drive *re* fuel economy, weight, reliability, reserve power and simplicity for ships in general, and then discusses them relative to specific types such as cargo vessels, oil tankers, yachts, tugs, etc. His heart is in his work and he does it well.

Radio in general is touched upon in a sketchy manner, the radio compass being featured.

Short descriptions are given of generator equipment, switch board equipment, battery charging, deck auxiliaries, engine room auxiliaries, dock yard equipment, etc.

Taken as a whole or in detail the book is a valuable one for reference, for reading, or for study.

G. F. N.

MARITIME CONNECTICUT DURING THE AMERICAN REVOLUTION, 1775-1783. Limited Edition. By Louis F. Middlebrook.

Two volumes, 50 rare illustrations, 8vo. 275+300 pp., including indexes in each volume, blue cloth binding, gilt tops, decorative end papers, boxed. Price per set $10.00. The Essex Institute Publishers, Salem, Massachusetts.

This work is an historical collection of naval data, containing the records and exploits of over three hundred State and Privateer Vessels of Con-

necticut, officially commissioned by Governor Trumbull ("Brother Jonathan") and employed against Britain to help defend and establish the sea power of the Colonies during the struggle for independence.

It has been prepared by its author after careful search of old Connecticut Maritime and British Admiralty Court Records, individual, and other sources of supply; and includes crew-lists, combats, captures and various data concerning the Connecticut Naval Service both on the high seas as well as for the defense of Long Island Sound and its strategic harbors, during the American Revolution.

OLD-TIME SHIPS OF SALEM.

100 pp., folio, 51 illustrations. Price: paper, $4.00; red buckram, $5.50, postpaid. The Essex Institute, Salem, Mass.

A new edition of this popular and attractive publication, with its colored pictures of "tall ships had souls and plow'd with reason up the deeps," so eagerly sought by all lovers of marine, is herewith offered.

Three new vessels are added in this third edition—the Ship *Glide*, Ship *Recovery*, and Ship *Persia*, with description uniform with the other editions.

Colored plates included are:

America	George	Naiad
Belisarius	Glide	Olinda
Brookline	Grand Turk	Persia
Caroline	Hercules	Recovery
Cleopatra's Barge	Iris	St. Paul
Essex	Leander	Thomas Perkins
Franklin	Margaret	Ulysses
Friendship	Mount Vernon	

and numerous other illustrations.

COSMOGRAPHIE ET NAVIGATION. By C. Cornet, Professor d'Hydrographie, Directeur de l'Ecole nationale de Navigation de Saint-Malo. Gauthier-Villars & Cie. 55, Quai des Grands-Augustins, Paris. 40 fr.

A work on navigation for the use of officers and student officers of the French Merchant Marine, containing the necessary theory ably set forth. Part I contains such theory as is required for student officers facing examination, and for captains of coast wise vessels. Part II contains such additions in theory to the first part as are necessary for ocean going masters and officers. Part III shows the practical application of the theories of parts I and II. The fundamental application of this part is to arrange the necessary calculations in such a manner that the user can see why he takes the steps he does.

The volume seems a happy exposition of the what? why? and how? of navigation.

SECRETARY'S NOTES

Errata The formula in the article "The Great Planetarium of the German Museum at Munich," which appeared on page 773 of the May 1925 PROCEEDINGS, should read:

$$\frac{3^3 \times 11 \times 43}{2 \times 7 \times 13^3}$$

Membership New members joining since last report:

Pike, C. H., Lieutenant, U.S.N.
Allen, J. L., Lieutenant, U.S.N.
Warner, E. P.

New Books Attention is invited to the new book entitled "Naval Aviation," compiled for the use of the midshipmen in the Department of Seamanship, U. S. Naval Academy, by Lieutenant W. W. Warlick, U.S.N. This book has received very favorable notice in the Eastern press, and, being written in non-technical language, gives a clear, concise, yet comprehensive survey of naval aviation and its problems in the fleet. It deals with this subject in such a way as to be of the utmost interest to every officer in the service, especially to the younger officers who may desire to get firmly fixed in their minds once and for all just what part aviation plays in the Navy today, and the lines along which it will most probably expand in the near future. It is also of use to officers preparing for examinations for promotion. The book will also prove of interest to reserve officers and those civilians interested in aviation and the Navy.

Other books recently published and of interest to the officers of the Navy are the newly revised editions of "Naval Leadership," price $1.50, and "Notes on Naval Communications," price $1.30. The latter gives a clear and workable understanding of the fundamental principles underlying our present day communications system. It will also be helpful to officers preparing for examination.

Articles The Institute desires articles of interest to all branches of the service, including the reserve force. Non-members as well as members may submit articles, and authors receive due compensation for articles published. **Com-**

pact, well digested articles are more likely to be accepted for early publication. In accepting articles for publication, the Institute reserves the right to have such articles revised or rearranged, where necessary, in order to bring them up to the required standard of articles published in the PROCEEDINGS—the cost, if any, to be deducted from the compensation due the author.

Page Headlines The attention of readers is invited to the use of page headlines adopted in this issue of the PROCEEDINGS. This will allow filing of articles with positive identification as to source and date.

Discussions Discussion of articles published in the PROCEEDINGS is cordially invited. Discussions accepted for publication are paid for at approximately one-half the rate for original articles.

Book Reviews As soon as practicable after the publication of books on subjects of professional interest, the Institute aims to publish authoritative reviews of them.

Address of Members In the past, many errors have resulted from the habit of changing an officer's address as soon as his transfer orders are published in the papers. No change will be made in the future except upon receipt of notification by the member concerned. Reliance upon the former method may, in extreme cases, mean a delay of almost four months. To insure the prompt delivery of the PROCEEDINGS and other communications from the U. S. Naval Institute, it is essential that members and subscribers *notify the Secretary-Treasurer without delay of every change of address.* No responsibility can be accepted for failure to receive the PROCEEDINGS, where members fail to comply with this rule. Changes of address should reach the Institute by the 23d of the month, to be effective for the issue of the PROCEEDINGS of the following month.

Wanted: Luce's Seamanship The Naval Institute is desirous of obtaining several copies of Luce's *Seamanship* (any edition), and would appreciate it if anyone having same would communicate with the Secretary-Treasurer, stating edition, condition, and price desired.

H. A. BALDRIDGE,
Captain, U. S. Navy, Secretary-Treasurer.

PUBLICATIONS
U. S. NAVAL INSTITUTE

NAVAL LEADERSHIP

Naval Leadership: with Some Hints to Junior Officers and Others. 2nd Edition, revised 1925.

Containing some 200 pages of clear type on good paper, in a neat and durable fabrikoid binding, in a size convenient for the pocket, approximately 4½x7⅛". $1.50 postpaid.

NAVAL COMMUNICATIONS

Notes on Naval Communications. 2nd Edition, 1924.

Compiled and revised by Lieut. A. C. Kidd, U. S. Navy. The book contains the latest on communications, and is a necessity for those studying for promotion. 160 pages. $1.30 postpaid.

LAW

International Law for Naval Officers, 1924.

By Comdr. C. C. Soule, U. S. Navy, and Lieut. Comdr. C. McCauley, U. S. Navy. 148 pages. $2.00 postpaid.

Constitutional Law. Reprinted 1924 with slight additions.

By H. J. Fenton, M.A., LL.D. 351 pages. $2.25 postpaid.

NAVIGATION

Navigation, 1922.

By Lieut. Commanders E. A. Lofquist, and A. M. R. Allen, U. S. Navy. 508 pages, illustrated, $5.65 postpaid.

Navigation and Compass Deviation, 1918.

By Comdr. W. C. P. Muir, U. S. Navy. 765 pages. $4.20 postpaid.

Practical Manual of the Compass, 1921.

By Captain Harris Laning, U. S. Navy, and Lieut. Comdr. H. D. McGuire, U. S. Navy. 234 pages, illustrated, $3.90 postpaid.

Celo-Navigation, 1924.

By Commander Benjamin Dutton, U. S. Navy. Containing methods and problems for use of the new method of reckoning time. For use especially with *Navigation, 1922.* Suitable for use with any navigation textbook. Cloth, 69 pages. Price $1.25 postpaid.

MARINE ENGINEERING

Internal Combustion Engines, 1925.

Their Principles and Applications to Automobile, Aircraft, and Marine Purposes.

A complete and thorough revision of the 1920 edition by the Department of Marine Engineering and Naval Construction, U. S. Naval Academy.

Obsolete material has been omitted, and much new material has been added, such as Diesel engines, aircraft engines and naval type-V engine. 266 pages. $3.00 postpaid.

Naval Reciprocating Engines and Auxiliary Machinery, 1922.

By Commanders J. K. Barton, U. S. Navy, and H. O. Stickney, U. S. Navy. 634 pages, illustrated, with Atlas containing 48 plates, $6.50 postpaid.

Marine and Naval Boilers, 1920.

By Lieut. Commanders Frank Lyon, U. S. Navy, and A. W. Hinds, U. S. Navy. 404 pages, illustrated, $3.80 postpaid.

Naval Turbines, 1924.

By Commanders O. L. Cox, U. S. Navy, and M. A. Libbey, U. S. Navy. Prepared primarily for use in the instruction of midshipmen, the book covers the latest principles involved in turbine design and construction. 251 pages with many illustrations and drawings. Price $5.00 postpaid.

How to Preserve Your Boiler, 1921.

By Captain E. P. Jessop, U. S. Navy. 23 pages. $.30 postpaid.

NAVAL CONSTRUCTION

Principles of Naval Architecture and Warship Construction, 1924.

By Lieut. Comdr. G. C. Manning (CC), U. S. Navy, and Lieut. T. L. Schumacher (CC), U. S. Navy. A treatise especially prepared to furnish in compact form the information required by the operating personnel of the U. S. Navy. 368 pages with many illustrations and drawings. $5.00 postpaid.

Naval Artificer's Manual, 1918.

By Lieut. McCall Pate (CC), U. S. Navy. 797 pages, illustrated. $2.00 postpaid.

ELECTRICAL ENGINEERING

Robison's Manual of Radio Telegraphy and Telephony, 1924. 6th Revised Edition, enlarged and brought up to date.

By Commander S. C. Hooper, U. S. Navy. 906 pages, illustrated. $8.50 postpaid.

Modern Theory and Practice in Radio Communication, 1919.

By Asst. Prof. G. D. Robinson, U.S.N.A., and Lieut. P. L. Holland, U. S. Navy. 250 pages, illustrated. $3.00 postpaid.

Naval Electrician's Textbook, 1922.

Vol. I. Theoretical, 640 pages, illustrated. $4.80 postpaid. Vol. II. Practical, 473 pages, illustrated. $3.00 postpaid.

Storage Battery Manual, Including Principles of Storage Battery Construction and Design, 1920.

By Lieut. Comdr. Lucius C. Dunn, U. S. Navy. 400 pages, illustrated. $7.00 postpaid.

LANGUAGES

Composition for Naval Officers, 1921.

By Professors W. O. Stevens and C. S. Alden, U.S.N.A. 235 pages. $1.55 postpaid.

French Nautical Phrase Book and Reader, 1921.

By Professor P. J. des Garennes, U.S.N.A. 182 pages. $1.50 postpaid.

A Spanish Nautical Phrase Book and Reader.

Reprinted 1925 with additional corrections. By the Department of Modern Languages, U. S. Naval Academy. 175 pages. $2.00 postpaid.

AVIATION

Naval Aviation, 1925.

A text book primarily for the instruction of midshipmen, but is valuable to the service at large. Everything of a technical nature has been purposely excluded. Compiled by Lieut. W. W. Warlick, U. S. Navy. 128 pages. $1.75 postpaid.

Airplanes, Airships, and Aircraft Engines, 1921.

By Lieut. Albert Tucker (CC), U. S. Navy. 448 pages, illustrated. $3.50 postpaid.

PHYSICAL TRAINING

Manual of Athletic Requirements, 1922.

By Department of Physical Training, U. S. Naval Academy. 573 pages, illustrated. $3.75 postpaid.

MATHEMATICS

Trigonometry and Stereographic Projections, 1919.

By Professor S. J. Brown, U. S. Navy. 203 pages. $2.75 postpaid.

MISCELLANEOUS

U. S. Naval Cook Book, 1920.

By School for Cooks and Bakers, U. S. Naval Training Station, Newport, Rhode Island. 130 pages. $.60 postpaid.

The Northern Barrage, 1919.

127 pages. $3.00 postpaid.

Yankee Mining Squadron, 1920.

By Captain R. R. Belknap, U. S. Navy. 110 pages, illustrated. $1.25 postpaid.

Seaman's Handbook, U. S. Navy, 1921.

By Lieut. Comdr. Richard Wainwright, Jr., U. S. Navy, and Comdr. M. F. Draemel, U. S. Navy. 176 pages, illustrated. $.65 postpaid.

OFFICIAL DRILL BOOKS

(For Sale through U. S. Naval Institute)

Bluejacket's Manual, 6th Ed., 1922.
518 pages. $1.00 postpaid.

Boat Book, 1920.
258 pages. $.50 postpaid.

Landing Force Manual, 1920.
760 pages. $1.00 postpaid.

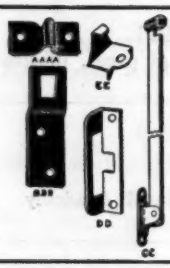
Ship and Gun Drills, 1922.
213 pages. $.50 postpaid

BOOK DEPARTMENT

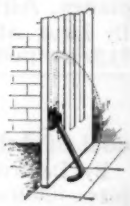
The Institute Book Department will supply any obtainable naval, professional, or scientific book at retail price, postage prepaid. The trouble saved the purchaser through having one source of supply for all books should be considered. The cost will not be greater and sometimes less than when obtained direct from dealers.

Address all communications to:

Secretary-Treasurer, U. S. Naval Institute, Annapolis, Md.



Window Screen and Storm Sash
HANGERS AND
FASTENERS
Garage Door
BOLTS AND HOLDERS
PHENIX MFG. CO.
018 Center Street
MILWAUKEE, WIS.



Power - Economy - Performance

Insured When Your Motor Is Equipped with the Famous

STROMBERG CARBURETOR

Best for Aeroplanes, Boats, Trucks and Passenger Cars

STROMBERG MOTOR DEVICES COMPANY

IMPERVIOUS VARNISH CO.

Manufacturers
Electrical Insulating Varnishes
Baking Enamels, Lacquers, Coil and
Special Varnishes

421 Wood Street PITTSBURGH, PA.

New England Coal & Coke Company

MINERS AND SHIPPERS

STEAM and GAS COALS

FROM THE

New River, Pocahontas, Pennsylvania and Fairmont Fields

GENERAL OFFICES

111 Devonshire St. Boston, Mass.

BRANCH OFFICES

Norfolk, Va. Johnstown, Pa. New York, N. Y. Baltimore, Md.

Standard Steam Pressure Reducing Valves and Pump Governors for Marine Service

MASON REGULATOR COMPANY

BOSTON, MASS.

THE ANNAPOLIS BANKING & TRUST COMPANY
ANNAPOLIS, MD.
Safe Deposit Boxes for Rent Total Resources—$2,400,000
4% Paid on Savings Accounts—2% Paid on Checking Accounts
Foreign Exchange and Travelers Checks Issued
Since its Foundation this Bank has handled the moneys of the Officers and Midshipmen of the United States Navy. We invite you to make this Bank your Business Home throughout your Naval Career.
JAMES A. WALTON, President — RIDGELY P. MELVIN, Vice President and Attorney — F. H. THOMPSON, JR., Treasurer

Gould Battery
For Every Battery Purpose!
GOULD STORAGE BATTERY CO., Inc. 250 Park Ave., N. Y.

Laundry Machinery

The American Laundry Machinery Company has planned and equipped the laundries of many of the foremost military and naval hospitals in this country. It maintains a corps of engineers who specialize in this work.

If you have any questions pertaining to modern hospital laundry practice, you will find consultation with these specialists advantageous. This service is gladly offered without any obligation on your part whatsoever.

The American Laundry Machinery Company
Norwood Station, Cincinnati, Ohio
The Canadian Laundry Machinery Co., Ltd., 47-93 Sterling Road
Toronto, Ontario, Canada
Agents:
British-American Laundry Machinery Co., Ltd., Underhill Street, Camden Town, London, N. W. 1, England

COSBY PRODUCTS COMPANY
Manufacturers of Cleaning Compound
Marvel Silver Polish — Marvel Metal Polish
Marvel Aluminum Polish — Supreme Metal Polish
549 Fulton Street, CHICAGO, ILL.

General Petroleum Corporation

Producers and Refiners of Petroleum

LOS ANGELES, CALIFORNIA

OFFICES:

SAN FRANCISCO
PORTLAND

LOS ANGELES
SEATTLE
TAMPICO, MEXICO

NEW YORK
KETCHIKAN, ALASKA
BUENOS AIRES, ARGENTINE

Exide
BATTERIES

Long-lived, Powerful, Dependable. Made by the world's largest manufacturers of storage batteries for every purpose.

THE ELECTRIC STORAGE BATTERY CO.
PHILADELPHIA

THE CARPENTER STEEL COMPANY

Highest Grade Tool-Alloy and
Non-Corrosive Steels

H. M. SAWYER & SON

EAST CAMBRIDGE, MASS.

Oiled Clothing for Naval Uses
Also Lightweight Color Coats (Red, Blue and Green)
for Women and Children

"COLVER" TRADE MARK NAVY STANDARD BITUMINOUS COAL

Mined at Ebensburg No. 1 Mine
Annual Capacity One Million Tons

Producers

COLEMAN & CO., Inc.

PHILADELPHIA
Bankers Trust Building

NEW YORK
25 Broadway

THE BEST-CLYMER COMPANY
ST. LOUIS, MO.

We specialize on

PRESERVES, APPLE BUTTER and SYRUP

for the Navy and Army on our famous Temtor Brand.

SURGICAL SUPPLIES

manufactured by Bauer & Black are accepted everywhere as meeting all the requirements as to quality and sterility. They are dependable, which is the supreme test of all surgical dressings.

SPECIALTIES

Handy Fold Gauze — Picric Acid Gauze
Surgical Lubricant — Handy Packer Strips
Zinc Oxide Adhesive Plaster
Moleskin Adhesive Plaster
Dermal & Tension Sutures
Full Line of Sutures and Ligatures
Catgut—Silk—Silkworm Gut
Kangaroo Tendon

Copy of Booklet on Ligatures and Sutures Sent on Request

Kinney Fuel Oil Service Pump

The Pump shown in the above cut is built in sizes ranging from 5 to 10 GPM at 300 pounds pressure and from 10 to 60 GPM at 60 pounds pressure. Larger sizes will be furnished on application.

KINNEY MFG. CO., BOSTON, MASS.

Satisfies Every Radio Wish

THE MELCO SUPREME RECEIVER

A five tube tuned radio frequency receiver that embodies every feature demanded by the most discriminating enthusiasts for perfect radio reception. The Melco Supreme really amazes in its performance any time and any place.

If you build your own, Melco Knock-Down Kits are available.

Your dealer will be glad to demonstrate. Ask for our literature. It's interesting.

AMSCO PRODUCTS CO. FAIRBANKS BLDG. NEW YORK

WYATT-PROCK LUMBER COMPANY
PHILADELPHIA
Specialists in Pacific Coast Products
Cargo and Rail Shipments

HASKELITE PLYWOOD

HASKELITE Aircraft Plywood is the only plywood made with Blood Glue. HASKELITE can be furnished in any size or thickness and in any wood. Let us send you our Miscellaneous HASKELITE Aircraft Stock List.

HASKELITE MANUFACTURING CORP.
133 West Washington Street CHICAGO, ILL.

TOBIN BRONZE

Non-Corrosive in Sea Water — Reg. U. S. Pat. Off. — Readily Forged at Cherry Red Heat

Round, Square and Hexagon Rods for Bolts and Rivets. Finished Pump Piston Rods, Valve Stems and Motor Boat Shafting, Rolled Plates for Pump Linings, and Condensers

THE AMERICAN BRASS COMPANY

General Offices: Waterbury, Conn.

STRATFORD OAKUM

Known as the World's Best for Nearly a Century

GEORGE STRATFORD OAKUM CO.

Jersey City — New Jersey

Ford Instrument Company, Inc.

Rawson St. and Nelson Ave.

LONG ISLAND CITY, N. Y.

GUN FIRE CONTROL APPARATUS,
SCIENTIFIC, MATHEMATICAL AND
CALCULATING INSTRUMENTS
CONSULTING ENGINEERS

W. MEADE HOLLADAY, President — CHARLES F. LEE, Vice-President — D. J. THOMPSON, Cashier — JOHN M. GREEN, Asst. Cashier

The State Capital Bank of the E. S. T. Co.

Church Circle & Gloucester St., Annapolis, Md.

"Naval Accounts Solicited"

The Farmers National Bank of Annapolis, Md.

GROSS ASSETS $3,179,863.00 — ESTABLISHED 1805 — 4% INTEREST ON SAVINGS ACCOUNTS

STORAGE VAULTS — SAFE DEPOSIT BOXES

"John Crane"

Style 300

Horse Sense in Packing

Packing may be a source of trouble: or it may do its own job efficiently and not mutilate the metal that moves beneath it.

Naval and marine engineers have obtained splendid success with "JOHN CRANE" Style 300 babbitt foil in asbestos channel—a serviceable and economical packing for steam rods, compressors, pumps, etc.

Write "JOHN CRANE" Style 300 in your specifications (approved).

CRANE PACKING COMPANY

1809 Cuyler Ave., Chicago

CONSOLCO

H. P. SHEET NO. 500

A compressed asbestos sheet suitable for superheated steam at 300 pounds pressure and 625 degrees F. temperature and for H. P. joints of internal combustion engines.

Furnished in thicknesses of 1/64 to ¼" in sheets of various sizes.

Consolco can be furnished in gasket form—all shapes and sizes.

WISOID SHEET PACKING

NO. 567 FOR LIQUIDS

A plant fibre sheet for joints of lubricating and fuel oil also all gasoline joints.

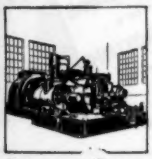
Wisoid contains no rubber or asbestos and is not affected by action of gasoline, oils, greases.

Is recommended for all liquid conditions under 300° F. temperature.

Manufacturers of High Grade Packings for All Conditions

CONSOLIDATED PACKING AND SUPPLY CO., 21 Barclay St., New York

---



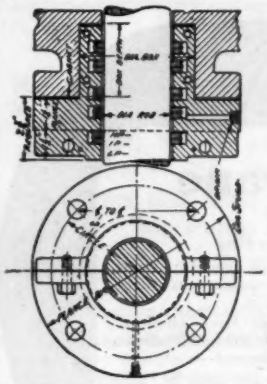
COMPLETE POWER UNITS WITH ANY TYPE OF PRIME MOVER

POWER, ELECTRICAL and INDUSTRIAL MACHINERY

ELECTRICAL Machinery, Steam Engines, Steam Turbines, Condensers, Gas Engines, Oil Engines, Hydraulic Turbines, Pumping Engines, Centrifugal Pumps, Mining Machinery, Metallurgical Machinery, Crushing Machinery, Cement Machinery, Flour Mill Machinery, Saw Mill Machinery, Air Compressors, Air Brakes, Steam and Electric Hoists, Farm Tractors, Power Transmission Machinery, Perforated Metals, Timber Preserving Machinery.

ALLIS-CHALMERS MANUFACTURING CO.

MILWAUKEE, WIS. U.S.A.



Metallic Packing

FOR

All Conditions

OF

Marine Service

Send for Catalogue and List of Users

FRANCE PACKING COMPANY

6506 TACONY ST., PHILADELPHIA, PA.

SPERRY

GYRO-PILOTS GYRO SHIP STABILIZERS GYRO-COMPASSES
NAVIGATIONAL INSTRUMENTS
GUN FIRE CONTROL APPARATUS
NAVAL, MILITARY AND COMMERCIAL SEARCHLIGHTS

THE SPERRY GYROSCOPE COMPANY

LONDON 15 Victoria Street — NEW YORK Manhattan Bridge Plaza, Brooklyn — TOKYO Mitsui Building

SPERRY

FOR BETTER NAVIGATION

Tycos temperature instruments

INDICATING
RECORDING
CONTROLLING

The Line is Complete
Write
For Catalogs

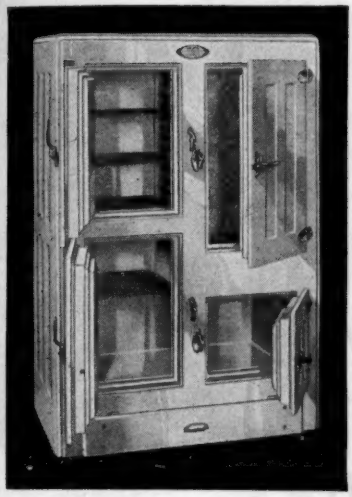
Taylor Instrument Companies

ROCHESTER, N. Y., U. S. A.

CANADIAN PLANT TYCOS BUILDING, TORONTO

There is a Tycos or Taylor Temperature Instrument for Every Purpose

Mention the Naval Institute—It Identifies You



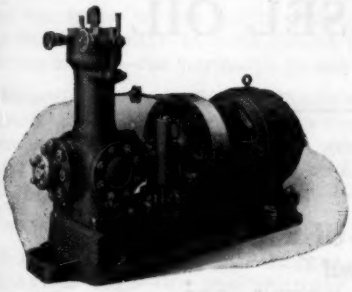
Refrigerators should be white outside as well as inside. An aid to cleanliness and sanitation.

White porcelain enamel fused on steel will hold its immaculate color for years—will not craze or peel.

The famous Bohn Syphon Refrigerator is now made **only** in white porcelain both inside and outside. All standard sizes. At prices little more than the old fashioned wood box.

Send for Catalogue.

BOHN REFRIGERATOR COMPANY
ST. PAUL, MINNESOTA



Marine Refrigeration

York CO_2 Refrigerating Machines are specially designed to meet every refrigerating requirement in the Navy and Marine Service.

They are built in sizes ranging from ¼-ton refrigerating capacity upwards, and can be driven by any available power.

YORK MANUFACTURING CO.
Ice Making and Refrigerating Machinery Exclusively
YORK PENNA

WHITMER-PARSONS PULP & LUMBER COMPANY
Manufacturers
SPRUCE HARDWOODS HEMLOCK
OFFICE: 1411 Finance Bldg., Philadelphia, Pa.
MILLS: Horton, W. Va.; Ravensford, N. C.; Sunburst, N. C.

AMERICAN TWIST DRILL & TOOL COMPANY
MANUFACTURERS OF
FORGED HIGH SPEED DRILLS OF QUALITY
DETROIT, MICH.

Mention the Naval Institute—It Identifies You

GULF

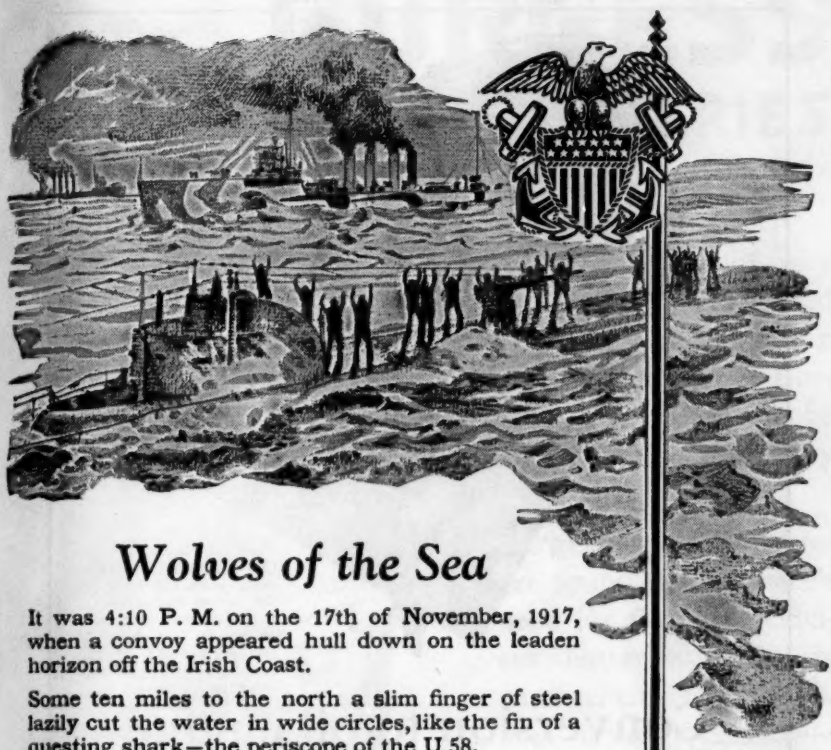
FUEL OIL
GAS OIL
DIESEL OIL

There is more power in

THAT GOOD GULF GASOLINE
and
SUPREME AUTO OIL

GULF REFINING COMPANY

New York Boston New Orleans
Philadelphia Atlanta Houston
General Sales Office
PITTSBURGH, PA.



Wolves of the Sea

It was 4:10 P. M. on the 17th of November, 1917, when a convoy appeared hull down on the leaden horizon off the Irish Coast.

Some ten miles to the north a slim finger of steel lazily cut the water in wide circles, like the fin of a questing shark—the periscope of the U 58.

As the convoy approached, excitement on the U boat increased. Her torpedoes were in the tubes and the range was being plotted—when suddenly two destroyers bore down upon her at full speed—the U. S. S. Fanning and Nicholson.

The submarine submerged.

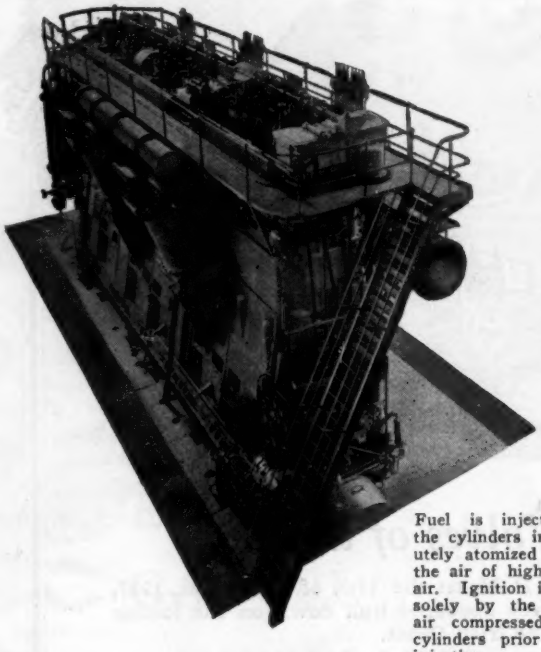
With a dull roar the depth charges dropped by the destroyers tore the sea asunder and the U 58 struggled to the surface. The Fanning opened fire upon her and after three shots the crew appeared on deck. Before they could be taken off the U 58 sank, forcing the officers and men to swim to the Fanning.

This action took exactly 18 minutes.

Du Pont Powder has been inseparably connected with the combat history of every organization in the Service. In 1802, practically all du Pont Powder was made for military purposes. Today, 98% is produced for industrial uses.

E. I. DU PONT DE NEMOURS & CO., Inc.
Wilmington, Delaware

DU PONT



Fuel is injected into the cylinders in a minutely atomized form by the air of high-pressure air. Ignition is caused solely by the heat of air compressed in the cylinders prior to fuel injection.

Conversion to oil engine drive at minimum cost

THE Bethlehem Oil Engine simplifies the conversion of steamships to oil engine power—and minimizes the cost. It is the unusual compactness of the Bethlehem Oil Engine that makes its installation so relatively simple. This American-designed engine is of the two-cycle type, combining maximum power with minimum weight and space occupied.

In the majority of vessels, the Bethlehem Oil Engine can be installed without changing the stern construction and without enlarging the propeller shaft. The oil engine can be placed in the machinery space formerly occupied by the steam engines and boilers.

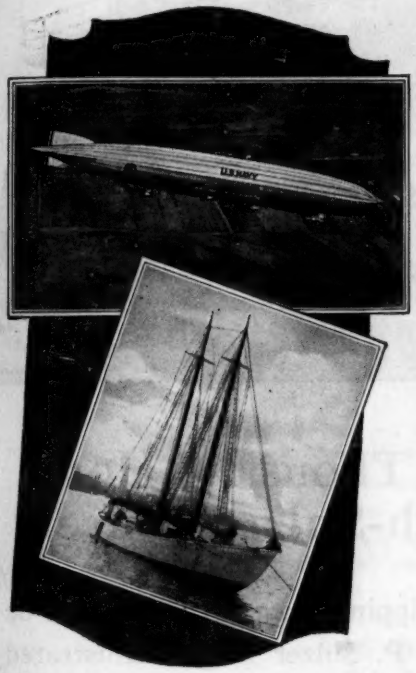
Bethlehem engineers will welcome an opportunity to explain the advantages of the Bethlehem Oil Engine to any interested shipowner.

BETHLEHEM SHIPBUILDING CORPORATION, LTD., BETHLEHEM, PA.
General Sales Offices: 25 Broadway, New York City

BETHLEHEM OIL ENGINE *Large Unit Type*

Further Adventures of

BURGESS RADIO BATTERIES



U. & U. Photos

The Shenandoah Is Equipped with Burgess Batteries and MacMillan Carried Them to the Arctic

If the quality of any product may be judged in part by the standing of its users, surely Burgess quality must be considered unusually high.

Burgess Radio Batteries are found where there's need for the most efficient batteries made—in emergencies where failure brings disaster—with explorers in far-off lands—with the unsung heroes of the air service—beneath the seas with the crew of the submarines.

"ASK ANY RADIO ENGINEER"

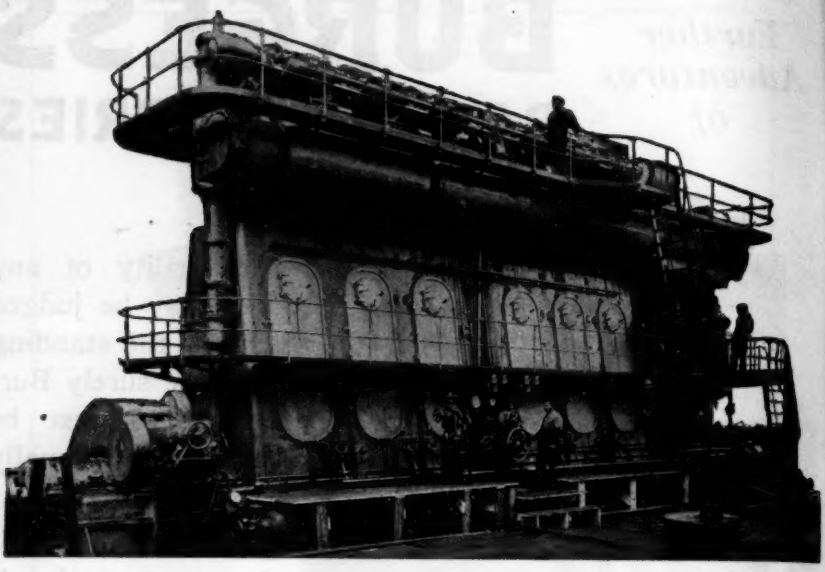
BURGESS BATTERY COMPANY

Engineers DRY BATTERIES Manufacturers
Flashlight - Radio - Ignition - Telephone

General Sales Office: Harris Trust Bldg., Chicago

Laboratories and Works: Madison, Wis.

In Canada: Niagara Falls and Winnipeg



Four Three Thousand Horse Power Busch-Sulzer Diesels

Purchased by U. S. Shipping Board from us will be similar to the 3000 H. P. Sulzer Engine illustrated above.

6 Cylinders—30″ x 52″ - 90 R. P. M.

2 Cycle, Single Acting

Length Over Thrust Block About 55 Feet

BUSCH-SULZER BROS.-DIESEL ENGINE CO.

ST. LOUIS, MO.

SPECIAL NOTICE

Naval Institute Prize Essay, 1926

A prize of two hundred dollars with a gold medal, and a life membership in the Institute (unless the author is already a life member, in which case he will receive the commuted value thereof), is offered by the Naval Institute for the best essay submitted on any subject pertaining to the naval profession.

The following rules will govern this competition:

1. The award of the prize to be made by the Board of Control, voting by ballot and without knowledge of the names of the competitors.

2. Each competitor to send his essay to the Secretary-Treasurer in a sealed envelope marked "Prize Essay Contest." The name of the writer shall not appear on the essay, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary-Treasurer, with the motto on the outside and the writer's name and motto inside. This envelope will not be opened until after the decision of the board. Essays must be received on or before January 1, 1926.

3. In addition to the "Naval Institute Prize," one or more essays may receive "Honorable Mention," if of sufficient merit to justify that award; or, in the event that no essay is adjudged of sufficient merit to receive the "Prize," the best essay submitted may receive "Honorable Mention" in lieu thereof.

4. In case one or more essays receive "Honorable Mention" the writers thereof will each receive a prize, the amount of such awards to be decided by the Board of Control in each case.

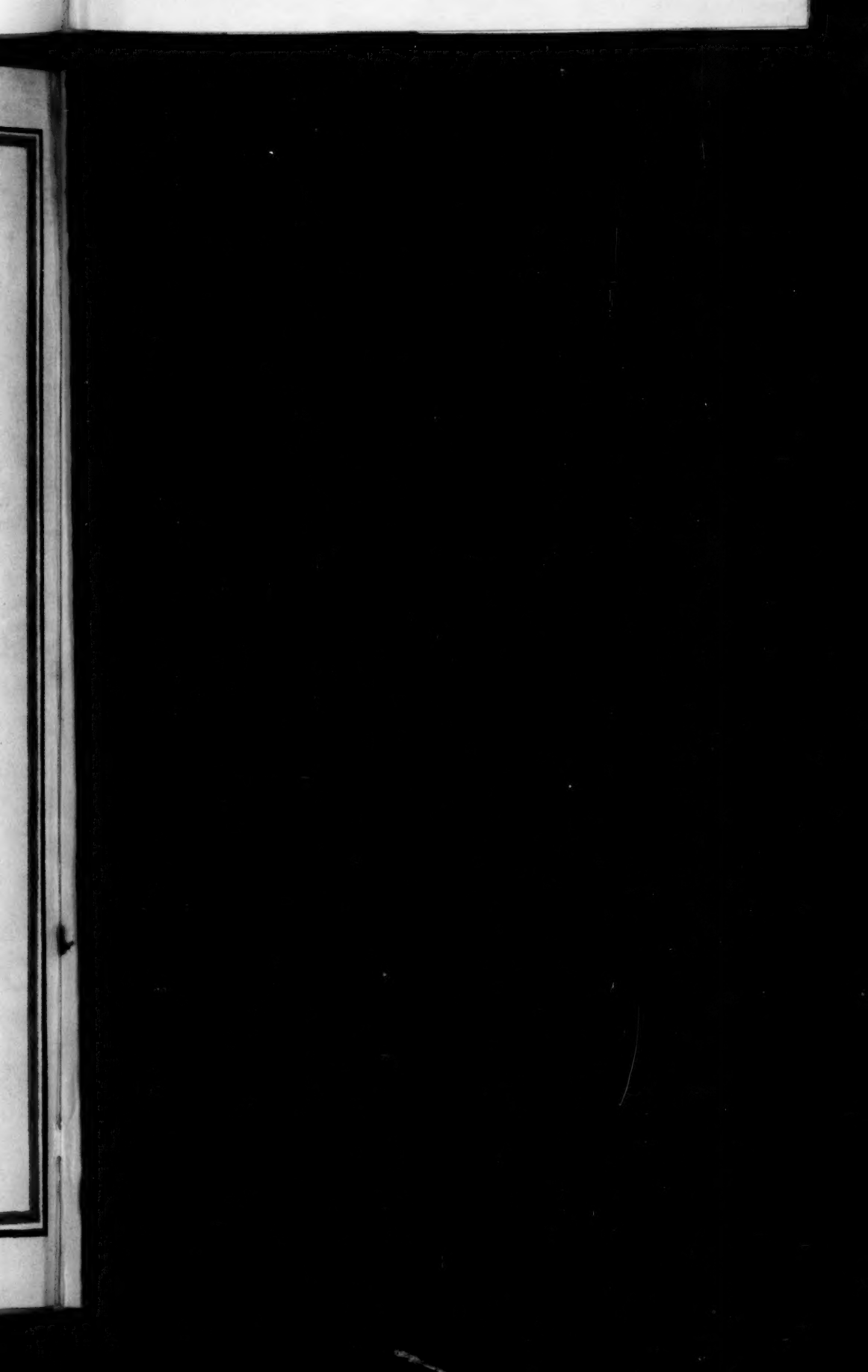
5. Announcement of awards will be made as soon as practicable after January 1, 1926.

6. Essays awarded the "Naval Institute Prize" or "Honorable Mention" will be published in the Naval Institute Proceedings as soon as practicable. Essays not awarded a prize may be published at the discretion of the Board of Control, and the writers of such articles shall be compensated at the established rate for articles not submitted in competition.

7. Articles should be limited to twenty (20) printed pages in the Proceedings (approximately 8,000 words), but shorter articles will receive equal consideration.

8. In the event of the prize being awarded to the winner of a previous year, a gold clasp suitably engraved will be given in lieu of the medal.

9. All essays must be typewritten, and submitted in duplicate.

H. A. BALDRIDGE,
Captain, U.S.N., Secretary-Treasurer.

U. S. NAVAL INSTITUTE
PROCEEDINGS